APPENDIX K

many former manufacturing operations, the practice of on-site disposal of both process and non-process residuals, and inherent uncertainties regarding timing, volumes, locations and substances, make it difficult to assess property-specific characteristics. Consequently, the study approach considers the FMC property by geographic study areas.

The following areas represent a reasonable spatial subdivision of the FMC property as a means of evaluating site characteristics and possibly identifying specific areas of concern:

A. Former Surge Pond Area

B. Former Coal Pile Area

C. Former R & D Area

D. Former Fermentation Area

E. Former Sluiceway Area

F. Inactive Disposal Area

G. Southwest Plant Complex

H. Stormwater Retention Basin Area

I. Firewater Pond Area

These areas are identified on Figure 3. Note that many of the areas are the result of former practices. The remainder of this Report will address the overall FMC property by considering each property-specific study area.

2.03.3.1 Former Surge Pond Area:

The former surge pond area is the most hydraulically upgradient location on the FMC property. This area is contiguous to the existing Pounce® manufacturing facilities. Chemical manufacturing has occurred in the former surge pond area since

before 1957. The surge pond itself was formerly used to collect stormwater runoff in the area. Water collected in the pond was pumped to treatment prior to permitted discharge to Stonehouse Cove. The surge pond was closed in 1983 and has since been removed.

2.03.3.2 Former Coal Pile Area:

The former coal pile area was reportedly used for coal storage for many years. Coal usage was discontinued in the early 1950's.

2.03.3.3 Former R & D Area:

The former R & D (research & development) area was previously used for various R & D applications. The buildings were demolished in 1972. Waste solvents were generated by the R & D facilities. A nearby subsurface steel tank was used to store spent solvents and reportedly was pumped out for disposal. The tank was subsequently excavated and removed.

2.03.3.4 Former Fermentation Area:

The former fermentation area previously contained buildings involved in the fermentation of molasses to various intermediate and end products. All of these buildings have been demolished. The basement of one of these buildings was reportedly used for open burning of trash and waste materials from offices and manufacturing. This building's foundation has since been filled with debris and rubble.

2.03.3.5 Former Sluiceway Area:

A concrete sluiceway was previously used to convey wastewater to the southern part of the plant site with ultimate discharge to Curtis Bay. The sluiceway was abandoned and backfilled in 1972.

2.03.3.6 Inactive Disposal Area:

The inactive disposal area had been used for many years for disposal of manufacturing wastes and construction debris. On-site disposal in this area ceased during 1975. Both its boundaries and contents are poorly defined. Available information indicates that a variety of bulk and containerized residues from chemical production were disposed in this area. Materials believed present include acetoacetarylides, carbamates, pyrethrum flower residues, 7-OH tar, 7-Nitro centrifuge bottoms, Ethion® wastes, and Butacide® tars.

2.03.3.7 Southwest Plant Complex:

The southwest plant complex, along the eastern shore of Stonehouse Cove, was the site of lagoons, water intakes and outfalls, and old process facilities. Between 1970 and 1980 the lagoons were filled, the outfalls decommissioned, and the shoreline recontoured. In addition, this area includes many gravity sewers, sumps and storage tanks associated with past and present manufacturing operations. The gravity sewers and sumps in this area are being inspected as part of a plant-wide program. Those facilities of questionable integrity have been and are being rehabilitated or removed. For example, a sump located near Well 8 was

inspected and was determined to have a sizable opening. The sump contained activated carbon and wastewater associated with the Calgon treatment system. The sump was cleaned and taken out of service until properly repaired.

2.03.3.8 Stormwater Retention Basin Area:

An impoundment was constructed around 1960 in the vicinity of the present Stormwater Retention Basin (SRB). This impoundment reportedly contained spent acid from the manufacture of Tedion®, an agricultural chemical. This acid impoundment was removed from service in the early 1970s. It reportedly was excavated and residues were disposed off-site during expansion of the 7-OH Plant 3 facility.

The Stormwater Retention Basin was constructed in 1976 to collect stormwater runoff from the 7-OH plant area. It is presently a single clay liner surface impoundment, but is proposed to be removed and replaced with a dual cell, subsurface, rectangular concrete tank. Regulatory review, allocation of funds, engineering design, contractor selection, and equipment delivery will dictate the replacement schedule.

2.03.3.9 Firewater Pond Area:

The Firewater Pond was constructed in 1976, in conjunction with the Stormwater Retention Basin. The Firewater Pond contains brackish water pumped from Curtis Bay. It is used as a source of water to be used in the event of a fire.

APPENDIX L

1987

ORIGINAL (Red)

State of Maryland

DEPARTMENT OF THE ENVIRONMENT
201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201
AREA CODE 301 • 225-5647

William Donald Schaefer
Governor

Martin W. Walsh, Jr.
Secretary

CONTROLLED HAZARDOUS SUBSTANCES FACILITY PERMIT

Permit Number: A-023

Effective Date: October 5, 1987

Expiration Date: October 4, 1990

Pursuant to the Provisions of Health-Environmental Article, Section 7-232, Annotated Code of Maryland and regulations promulgated thereunder, the Office of Environmental Programs, Waste Management Administration, hereinafter referred to as "WMA" hereby authorizes

FMC Corporation
Agricultural Chemical Group

to operate a controlled hazardous substances Incinerator facility located at 1701 East Patapsco Avenue, Baltimore, Maryland in accordance with the following special and general conditions including the attached map made a part hereof, and the provisions of COMAR 10.51. Applicable regulations are those which are in effect on the date of issuance of this permit.

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated August, 1981 as modified by subsequent amendments dated January 13, 1984; August 10, 1984; February 28, 1985; April 10, 1985; September 4, 1985; October 31, 1985; September 4, 1986; September 30, 1986; December 4, 1986; December 31, 1986; April 1, 1987; April 2, 1987; April 24, 1987; May 5, 1987; June 16, 1987; June 23, 1987; July 14, 1987; and July 29, 1987 (hereafter referred to as the application) is accurate and that the facility will be constructed and/or operated as specified in the application. Any inaccuracies found in this information may be grounds for the termination or modification of this permit (see COMAR 10.51.07.02 J) and potential enforcement action. The Permittee must inform the WMA of any deviation from or changes in the information in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

ORIGINAL (Red)

PART III - INCINERATION

A. WASTE IDENTIFICATION

1. The Permittee may not incinerate any off-site generated waste.

2. The Permittee shall incinerate only the following on-site generated wastes:

NON-CHS WASTES

Liquid Waste Streams

a. Super Tar
b. Claisen Tar
c. 7-OH Tars (Plants I, III, IV)
d. DV Ester Step 1 Waste
e. DV Ester Step 3 Waste
f. Plant 4 CD-101 Flush Oil
g. Plant 4 Tars (U-11 and U-12 tars)
h. Waste No. 2 Fuel Oil
i. Waste Oil
j. Command Herbicide Organic Waste Stream
k. Diallyl Phthalates

Gaseous Waste Streams

l. Xylene Waste Gas Stream
m. 7-OH Plant III Step I Gas Steam

CHS WASTES

n. Second Basin Oil
o. Third Basin Oil
p. Waste Methanol
q. TMOA Waste (trimethyl-orthoacetate)
r. MAC Waste (Methallyl chloride)
s. Allyl Alcohol/Ether

ORIGINAL (Red)

t. Pounce Organics

u. DV Ester Step 3 Head Cut C/A

v. DV Ester Step 3 Bottoms

w. Heptane

x. Hexane

y. Xylene from 7-OH

z. Plant 4 Organics

B. WASTE FEED LIMITATIONS

1. The Permittee shall incinerate wastes listed in (A) above within the specifications listed below, except as provided in B.2 below:

   a. Total BTU loading from all wastes fed to the incinerator: less than or equal to 4.5 x 10^7 BTU/hour.

   b. Total chlorine loading from all wastes fed to the incinerator: less than or equal to [redacted]r.

   c. Total ash loading: less than or equal to [redacted] lbs/hour.

   d. Viscosity of waste streams fed through the organics nozzle: less than or equal to 50 centipoise at 100°F.

   e. Gaseous xylene waste feed rate: less than or equal to [redacted]ubic feet per minute (ACFM).

2. The Permittee, when incinerating CHS wastes listed in (A) above which contain Appendix V constituents shall comply with the specifications listed below:

   a. Waste methanol feed rate: less than or equal to [redacted]/hr. any one hr. 5%

   b. Combined feed rate of all 7-OH Tars: less than or [redacted]bs/hr.

   c. Waste Super Tar/Claisen Tar feed rate: less than [redacted]bs/hr.

   d. Total ash loading: less than or equal to [redacted]hour.

regeneration flow rate. Violation on ... vent rate for ... is in limit

C. OPERATING CONDITIONS

1. The Permittee shall incinerate wastes listed in (A) only when the incinerator is operating within the specifications listed below:

   a. Stack gas carbon monoxide (CO) concentration; less than or equal to:

      i. 500 ppm average corrected to 7% oxygen for any ten minute period

      ii. 100 ppm average corrected to 7% oxygen for any 60 minute period

   b. In determining compliance with (a) above assume a constant 15% oxygen level in the stack gas.

   c. Combustion chamber temperature as measured by the [redacted]s in the combustion chamber: [redacted]inimum a[redacted] when burning [redacted]s containing [redacted]nts; [redacted]F when burning any waste which does not contain Appendix V constituents. Any excursions below these limits shall be for less than [redacted] consecutive s[redacted].

   d. Primary combustion chamber air flow, including the xylene waste gas stream: less than or equal to [redacted]SCFM. Any excursions above this limit shall be for less than [redacted]ecutive [redacted]s.

   e. Secondary combustion chamber air flow: less than or equal to [redacted]. Any excursions above this limit shall be for less than sixty [redacted]consecutive seconds.

   f. Venturi quench column process water flow rate: greater than or equal to [redacted]. Any excursions below this limit shall be for less than sixty [redacted] consecutive seconds.

   g. Venturi quench column make-up water flow rate: greater than or equal to [redacted] Any excursions below this limit shall be for less than six[redacted](60) consecutive seconds.

   h. Packed tower scrubber liquid flow rate: greater than or equal to [redacted]gpm. Any excursions below this limit shall be for less than [redacted](60) consecutive seconds.

ORIGINAL (Red)

i. Scrubber liquid pH: greater than 5.5 and less than 9.5. Any excursions outside of this pH range shall be for less than ten ([redacted]ive minutes.

j. Wet electrostatic precipitator (WESP) recirculating pump flow rate: greater than or equal to 160 gpm. Any excursions below this limit shall be for less than six[redacted]consecutive seconds.

k. WESP make-up water flow rate: greater than or equal to 18 gpm. Any excursions below this limit shall be for less than sixty (60) consecutive [redacted]s.

l. WESP DC voltage: greater than or equal to [redacted]V. Any excursions below this limit shall be for less than sixty[redacted]ecutive seconds.

m. Combustion chamber pressure: less than atmospheric. Any excursions above atmospheric pressure shall be for less than [redacted]0) co[redacted]ive seconds.

2. The Permittee may not introduce wastes into the incinerator unless the incinerator and associated equipment are operating within the conditions specified above.

3. Within 120 days of permit issuance, the Permittee shall install, operate, maintain, and calibrate a system to [redacted]off waste feed to the incinerator. This system shall be operated whenever CHS wastes containing Appendix V constituents are fed to the incinerator and shall be operated to shut off any CHS waste stream containing Appendix V constituents when the conditions listed below are violated.

IV 2|1

a. Exhaust gas carbon monoxide concentration is greater than:

i. An average of 500 ppm for any ten-minute period corrected to 7% oxygen.

ii. An average of 100 ppm for any sixty-minute period corrected to 7% oxygen.

b. In determining compliance with a. above assume a constant 15% oxygen level in the stack gas.

ORIGINAL (Red)

c. The incinerator combustion chamber temperature, as measured by the thermocouples in the combustion chamber, falls below [redacted] for sixty (60) consecutive seconds.

d. Primary combustion air flow including the gaseous xylene waste stream: [redacted] ACFM for sixty (60) consecutive seconds.

e. The secondary combustion air flow: greater than [redacted] for sixty (60) consecutive seconds.

f. Scrubber liquid flow rate: less than [redacted] gallons per minute for sixty (60) consecutive seconds.

g. WESP DC voltage: less than 20 [redacted] for sixty (60) consecutive seconds.

4. If there is an incinerator shut-down or any of the automatic waste feed cut-off systems activate, the Permittee may not re-introduce waste to the incinerator until the cause of the incinerator shut down has been determined and the problem rectified.

5. The Permittee may not feed CHS wastes containing Appendix V constituents into the incinerator if any portion of the automatic waste feed cut-off system is inoperative, unless alternative monitoring approved by the Department is performed and monitored for manual shut down.

6. The Permittee may not operate the alternative monitoring required in (5) above for a period greater than [redacted] it is approved by the Secretary.

7. The Permittee shall stop all waste feed when changes in the waste feed or operating conditions are not in accordance with this permit.

D. PERFORMANCE STANDARDS

The Permittee shall operate and maintain the incinerator, in accordance with conditions III B and III C above, to meet the following performance standards:

1. A destruction and removal efficiency (DRE) greater than or equal to 99.99% for all Appendix V constituents.

ORIGINAL (Red)

2. When burning CHS wastes containing Appendix V constituents: a hydrogen chloride (HCl) emissions rate less than or equal to 4.0 lbs/hr or 1% of the HCl in the stack gas prior to entering any pollution control equipment.

3. A particulate matter emissions less than or equal to 0.030 grains per dry standard cubic foot corrected to 12% carbon dioxide

4. No stack gas emissions which are visible to human observers other than water in an uncombined form.

E. MONITORING AND INSPECTIONS

1. The Permittee shall maintain, operate, and calibrate monitoring equipment which continuously monitors and records the following:

Parameter	Frequency of Calibration
a. carbon monoxide concentration of incinerator exhaust gas corrected to 7% oxygen with assumed 15% oxygen level in the stack gas	daily
b. combustion zone temperature	quarterly
c. primary combustion air flow	monthly
d. secondary combustion air flow	monthly
e. scrubber liquid flow rate	monthly
f. WESP DC voltage	monthly

2. The Permittee shall monitor and record the following operating parameters at least every two (2) hours during incineration of wastes: process and make-up water flows to the venturi quench column, WESP recirculating pumps flow rate, WESP make-up water flow rate, and scrubber water pH.

3. The Permittee shall thoroughly visually inspect the incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) at least daily for leaks, spills, fugitive emissions, and signs of tampering.

4. The Permittee shall test the incinerator emergency waste feed cut-off system and associated alarms at least monthly to verify operability.

F. RECORDKEEPING

The Permittee must maintain a written operating log at the facility. For each calendar day on which hazardous waste is burned, the log must contain the information specified below:

1. Total quantity of each waste burned.

2. Description of all maintenance performed.

3. Results of all monitoring, testing, and inspections as required in Section E.

G. REPORTING

1. The Permittee shall report to the Secretary all occurances in which the parameters listed in Section C violate the limits and time periods specified. The report shall describe the parameter, date, start time, duration and (where appropriate) magnitude of the exceedance. It shall also describe the cause of the exceedance, corrective measures taken to prevent reoccurrence and whether automatic shut down occurred. If there are no exceedances during a given period, the Permittee shall submit a report to that effect.

2. The Permittee shall submit the above compliance reports on a quarterly basis no later than fifteen (15) days after the end of each calendar quarter.

3. The Permittee shall immediately verbally report to the Secretary any period in which a portion of the automatic cut-off system is inoperative and it is being monitored by an alternative method for manual shutdown. A written report shall be submitted with the above quarterly report.

H. WASTE ANALYSIS

Throughout operation of the incinerator, the permittee shall conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical limits specified in this permit, as specified in Attachment 1, waste analysis and at a minimum each time there is a change in the composition of the waste due to a process change.

ORIGINAL (Red)

I. **COMPLIANCE SCHEDULE**

1. Within 120 days of issuance of this permit, the Permittee shall install a waste feed shut off system to comply with conditions C.3a above. DONE FEB 5 88

J. **TEST SCHEDULE**

Within 90 days of issuance of this permit, the Permittee shall allow the Department to conduct a test to determine the HCl removal efficiency of the air pollution control devices associated with the incinerator. DONE 3 JUNE 88

K. **CLOSURE**

At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues (including but not limited to ash, scrubber waters, and scrubber sludges) from the incinerator site, in accordance with Attachment 6.

LIST OF ATTACHMENTS

Attachment No.		Applicability
1.	Waste Analysis Plan	Y
2.	Inspection Schedule	Y
3.	Training Outline	Y
4.	Contingency Plan	Y
5.	Incinerator and Control System Description	Y
6.	Closure Plan	Y
7.	Financial Assurance	Y

Ronald Nelson, Director
Waste Management Administration

October 5, 1987
Date Signed

APPENDIX M

11/30/88 ORIGINAL (Red)

IN THE MATTER OF:	*	DEPARTMENT OF THE ENVIRONMENT
FMC Corporation	*	
	*	
SERVE ON:		Hazardous and Solid Waste
	*	Management Administration
A. Parker Dean		2500 Broening Highway
FCM Corporation	*	Baltimore, Maryland 21224
1701 E. Patapsco Avenue		
Baltimore, Maryland 21226	*	C-O-89-057

* * * * * * * * * * * * * * * * * *

COMPLAINT

(1) **WHEREAS**, the State of Maryland, Department of the Environment, Hazardous and Solid Waste Management Administration pursuant to the powers, duties and responsibilities vested in the Secretary of the Environment by Environment Article, (formerly the Health-Environmental Article), Sections 1-301, 7-201 through 7-268, inclusive, Annotated Code of Maryland, and delegated to the Director, Hazardous and Solid Waste Management Administration, has reasonable grounds to believe that FMC Corporation has violated Maryland law, regulations and Controlled Hazardous Substance Facility Permit A023, issued on November 16, 1981, under Health-Environmental Article, Section 7-207, regarding storage of Controlled Hazardous Substances (CHS).

(2) **WHEREAS**, on September 9, 1988 and September 28, 1988 an inspection by representatives of the Hazardous and Solid Waste Management Administration revealed that containers of CHS were leaking and in poor condition while in storage on the 7-OH

ORIGINAL (Red)

container storage pad. Said condition constitutes a violation of COMAR 10.51.05.03B, 10.51.05.09B and CHS Facility Permit A023 General Condition A.

(3) **WHEREAS**, on September 9, 1988 and September 28, 1988 an inspection by a representative of the Hazardous and Solid Waste Management Administration revealed that containers of CHS, namely Toluene were in storage in an unpermitted CHS container storage area. Said condition constitutes a violation of COMAR 10.51.05.03B and CHS Facility Permit A023 General Conditon A.

(4) **WHEREAS**, on September 28, 1988 a review of the inspection log for the 7-0H container storage pad revealed that no notations were made on leaking and poor condition containers noted between September 9 and September 28, 1988. Said condition constitutes a violation of COMAR 10.51.05.02E4, 10.51.05.09E and CHS Facility Permit A023 General Condition A.

(5) **WHEREAS**, on September 28, 1988 an inspection by a representative of the Hazardous and Solid Waste Management Administration revealed that thirty-six (36) fifty-five gallon drums marked CHS were in storage outside the permitted CHS container storage area. Said condition constitutes a violation of COMAR 10.51.05.03B and CHS Facility Permit A023 General Condition A.

ORIGINAL (Red)

ORDER

THEREFORE, it is **ORDERED** by the Director of the Hazardous and Solid Waste Management Administration that FMC Corporation shall:

1. Inspect and maintain all Controlled Hazardous Substance containers as required by all applicable COMAR 10.51 regulations and FMC Controlled Hazardous Substance Facility Permit A023 General Condition A.

2. Maintain all inspection logs required for each Controlled Hazardous Substance unit as required by COMAR 10.51 and FMC Controlled Hazardous Substance Facility Permit A023 General Condition A.

CIVIL PENALTY

(A) The Hazardous and Solid Waste Management Administration is seeking a civil penalty in this case of $4,000.00.

(B) FMC Corporation has a right to a hearing pursuant to Environment Article, Sections 7-261 (9-337), Annotated Code of Maryland. The Office of Hearings will issue a notice of hearing date and location unless prepayment of the civil penalty is made. Prepayment would constitute a waiver of a hearing.

ORIGINAL (Red)

(C) An appearance before the Hearing Examiner constitutes an administrative hearing and FMC Corporation has the rights of any party in a contested case provided by the Maryland Administrative Procedure Act, State Government Article, Section 10-201, et seq., Annotated Code of Maryland.

(D) Depending upon the evidence presented at the hearing, the Office of Hearings may assess any penalty up to $1,000.00 for each day a violation existed or a maximum of $50,000.00.

PROCEDURE FOR REQUESTING A HEARING ON THE COMPLAINT AND ORDER

(E) FMC Corporation may obtain a hearing to contest the Complaint portion of this document by filing a written request for a hearing within ten (10) calendar days of receipt of this document in accordance with the Maryland Administrative Procedure Act, State Government Article, Section 10-201, et seq., and in accordance with the Environment Article, Section 7-261, (9-337), Annotated Code of Maryland. Such a request should be sent to Chief Hearing Examiner, Office of Hearings, 3th Floor, 2500 Broening Highway, Building # 30, Baltimore, Maryland 21224, with a copy to the Attorney who signed this document, at the Office of the Attorney General, Department of the Environment, 2nd Floor, 2500 Broening Highway, Building # 30, Baltimore, Maryland 21224.

ORIGINAL (Red)

(F) If FMC Corporation will be represented by an attorney in an administrative hearing, the attorney must be admitted to the Bar in the State of Maryland or must be specially admitted to the Maryland Bar pursuant to Maryland Rule 20 of the Maryland Rules governing admission to the Bar. Rule 20 governs special admission of out-of-state attorneys.

If you have any questions concerning this matter, please contact Mr. Joseph Stang, Inspector, Hazardous Waste Enforcement Division, Hazardous and Solid Waste Management Administration, at (301) 631-3400.

December 2, 1988
DATE

Ronald Nelson, Director
Hazardous and Solid Waste
Management Administration

Approved as to form and legal sufficiency this 30th day of November, 1988.

Patricia A. Smith
Assistant Attorney General

APPENDIX N

1676.029

CLOSURE CERTIFICATION

STORMWATER RETENTION BASIN

FMC CORPORATION
BALTIMORE, MARYLAND

DECEMBER 1988

O'BRIEN & GERE ENGINEERS, INC.
1304 BUCKLEY ROAD
SYRACUSE, NEW YORK 13221

TABLE OF CONTENTS

SECTION 1 - INTRODUCTION

1.01 Background

FMC Baltimore utilized a Stormwater Retention Basin to collect site runoff prior to on-site treatment and discharge to municipal sewer systems. Figure 1 is a site plan showing the location of the impoundment within the FMC property. The basin was constructed during 1976 and placed in operation in March 1977.

Analysis of basin influent and contents indicated that the impoundment occasionally contained liquids with a pH greater than 12.5 or less than 2.0. Therefore, the impoundment was classified as a hazardous waste storage facility and subject to the provisions of RCRA and COMAR 10.51. A RCRA Part B application was submitted to the State of Maryland in November 1985.

FMC decided to replace the impoundment with a tank system. Evaluation of several alternatives resulted in the selection of a below grade concrete tank with a primary and secondary HDPE liner. The selected location for the replacement facility was the same as the surface impoundment to take advantage of existing waste water and storm water transfer facilities.

A Closure Plan for the surface impoundment was submitted to the State of Maryland (State) and United States Environmental Protection Agency (EPA) in June 1987. A public hearing was held in September 17, 1987 to provide an opportunity for public comment on the Closure Plan. On October 6, 1987 the State approved the Closure Plan with the modifications presented in Exhibit A.

The construction of the replacement tank system was integral to the closure of the surface impoundment. Consequently the closure schedule, presented as Figure 2, resulted in completion of closure when the new facility was operational. The facility completed start-up testing during 1988.

1.02 Objectives

The approved Closure Plan included the submission of Closure Certification by both an independent Professional Engineer and FMC that the impoundment had been closed in accordance with the approved Closure Plan. The purpose of this Closure Certification Report is to document testing conducted during closure activities and provide a certification by an independent engineer that closure was completed in accordance with the approved Closure Plan.

SECTION 2 - CLOSURE ACTIVITIES

2.01 Inventory Management

When construction on the impoundment began it contained stormwater runoff and residual sludge. These substances were managed differently.

The storm water was pumped from the impoundment to the existing waste water treatment system for pre-treatment prior to discharge to the Patapsco waste water treatment facility. In addition, any water which entered the construction area during closure was managed in the same way.

The residual sludge was solidified using calcium oxide in roll off boxes. The solidified material was then transferred to transport vehicles for disposal at the permitted hazardous waste management facility operated by GSX Services (SCD070375985) located in Pinewood, South Carolina. Appendix A summarizes the information on shipments of solidified residue to the GSX disposal facility. The total mass of residue stabilized and disposed of off-site was approximately 1097 tons.

2.02 Facility Decontamination

Facility and equipment decontamination included several different operations. FabriForm erosion protection was removed and where contaminated disposed of in an off-site permitted facility. Equipment used during the operation of the impoundment was either stored and reused with the replacement tank, decontaminated, or disposed of off-site at a permitted facility.

Construction equipment was decontaminated on site, in accordance with the Closure Plan, prior to leaving the work area.

The stained FabriForm and other concrete removed from the impoundment was transported to the GSX facility in Pinewood, South Carolina. Appendix A presents a summary of shipments based on the copies of manifests retained by FMC. The total mass of FabriForm and concrete sent to GSX was approximately 504 tons.

Upon completion of residue removal and FabriForm removal the impoundment retained a portion of its clay liner. A series of tests was conducted on the liner to determine residual concentration to be encapsulated beneath the replacement tank. Appendix B presents the sample locations and test results from this effort. The results demonstrate that the residue was effectively removed prior to initiation of tank construction. The concentration of five indicator compounds in the soil at final grades was in the part per million range, demonstrating over 99.9% reduction from pre-closure concentrations.

Equipment used during construction included earth moving equipment, pile drivers, trucks, and steel sheeting. This equipment was rinsed and then steam cleaned to remove construction area residues. Prior to leaving the site the equipment was wipe tested using procedures presented in Appendix C. The results of the testing, presented in Appendix C, demonstrated that the equipment was decontaminated in accordance with the approved Closure Plan prior to leaving the construction area.

An asphalt pavement storage area was constructed as part of the closure program. The storage area was used to store soil from the impoundment area during the construction of the replacement tank. The stored soils were used to backfill against the concrete tank walls. When the asphalt area was empty it was washed down to remove residual soils. A wipe sample was collected and analyzed for selected parameters. The results of that sampling and analyses are presented in Appendix C. These results demonstrate that the closure was completed in accordance with the approved Closure Plan.

2.03 Cover Installation

A portion of the area occupied by the surface impoundment is now occupied by a smaller tank system. The remaining area was backfilled with soil from the excavation for the tank. The placed backfill was overlain by a clay cap system which was covered by asphalt.

The clay used to construct the clay cover was obtained from Campbell Sand and Gravel. Appendix D presents the results of testing conducted on the clay prior to selection for use. The results demonstrate that the clay met the specifications within the approved Closure Plan.

Prior to installation of the clay the soil backfill was compacted. Appendix E presents the results of testing done on the compacted soil. Subsequent to clay compaction samples were collected to demonstrate compliance with the approved Closure

Plan. The results presented in Appendix F demonstrate that the installed clay met the specifications contained in the approved Closure Plan.

Overlying the clay layer is a granular subbase for the asphalt cover. Appendix G presents quality control data on the granular base. The data demonstrate compliance with the approved Closure Plan.

Bound separately are as-built plans which document the construction of the replacement facility. Included within the as-built package are final grades and elevations for the concrete tank system and surrounding clay cap system. Visual inspection of the closed facility confirms that precipitation drains rapidly to the facilities sewer system in accordance with the approved Closure Plan.

2.04 Leachate Management

Rainfall and ground water infiltration to the construction area was pumped from the excavation to FMC's process waste water pretreatment facilities. The effluent was routed to the Patapsco waste water treatment facility for permitted discharge. This water management was in accordance with the approved Closure Plan.

ORIGINAL (Red)

2.05 Closure Certification

Certification of Closure is required under 40 CFR 265 and COMAR 10.51.05.07F. I am familiar with the closure actions and the approved Closure Plan and certify that closure of the Stormwater Retention Basin has been completed in accordance with the approved Closure Plan.

Steve R. Garver, P.E.
Vice President
New York State License No. 052526

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

ORIGINAL (Red)

Appendices

O'BRIEN & GERE

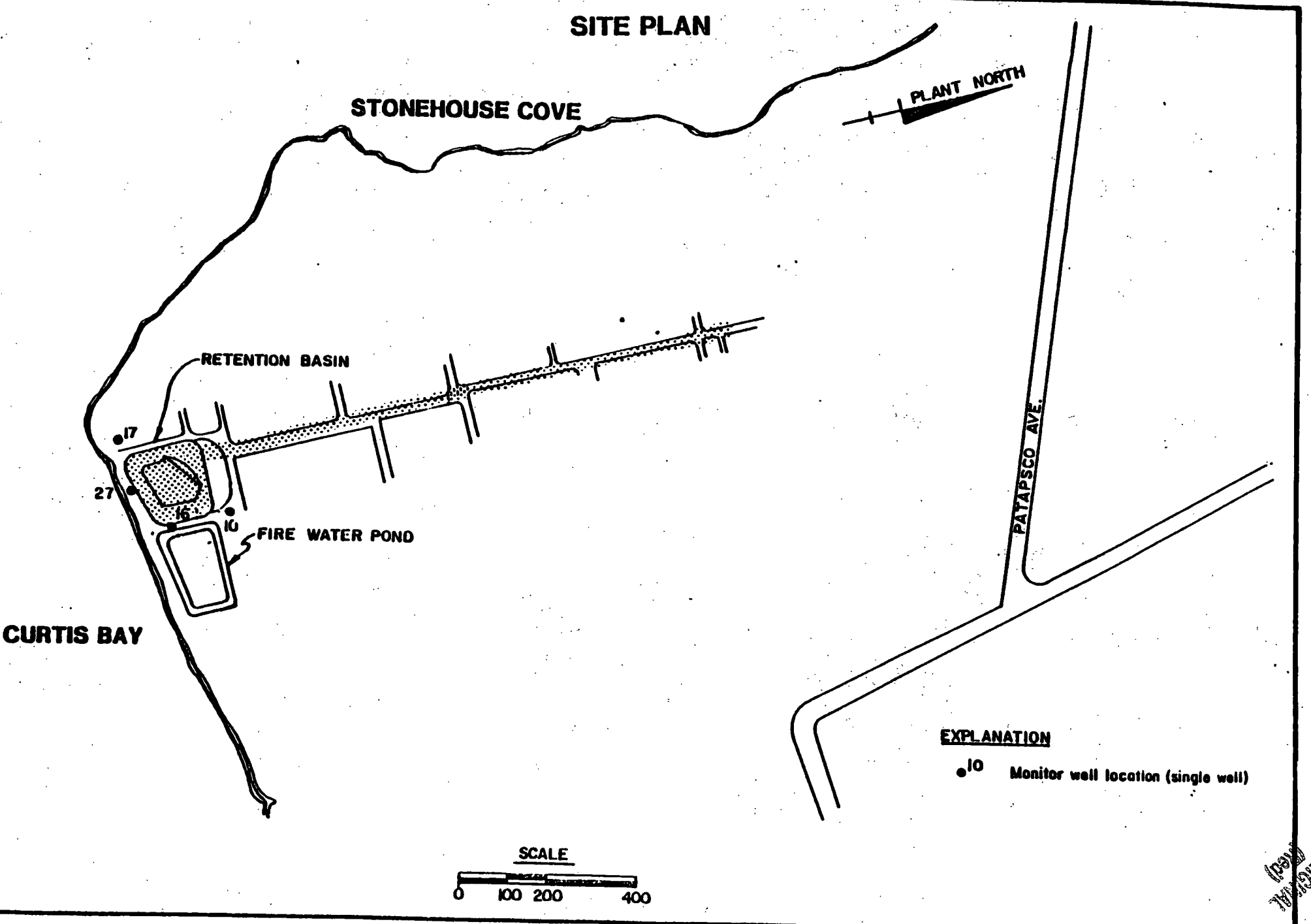

SITE PLAN
STONEHOUSE COVE
PLANT NORTH
RETENTION BASIN
17
27
16
10
FIRE WATER POND
CURTIS BAY
PATAPSCO AVE.
EXPLANATION
10 Monitor well location (single well)
SCALE
0 100 200 400

FIGURE 4

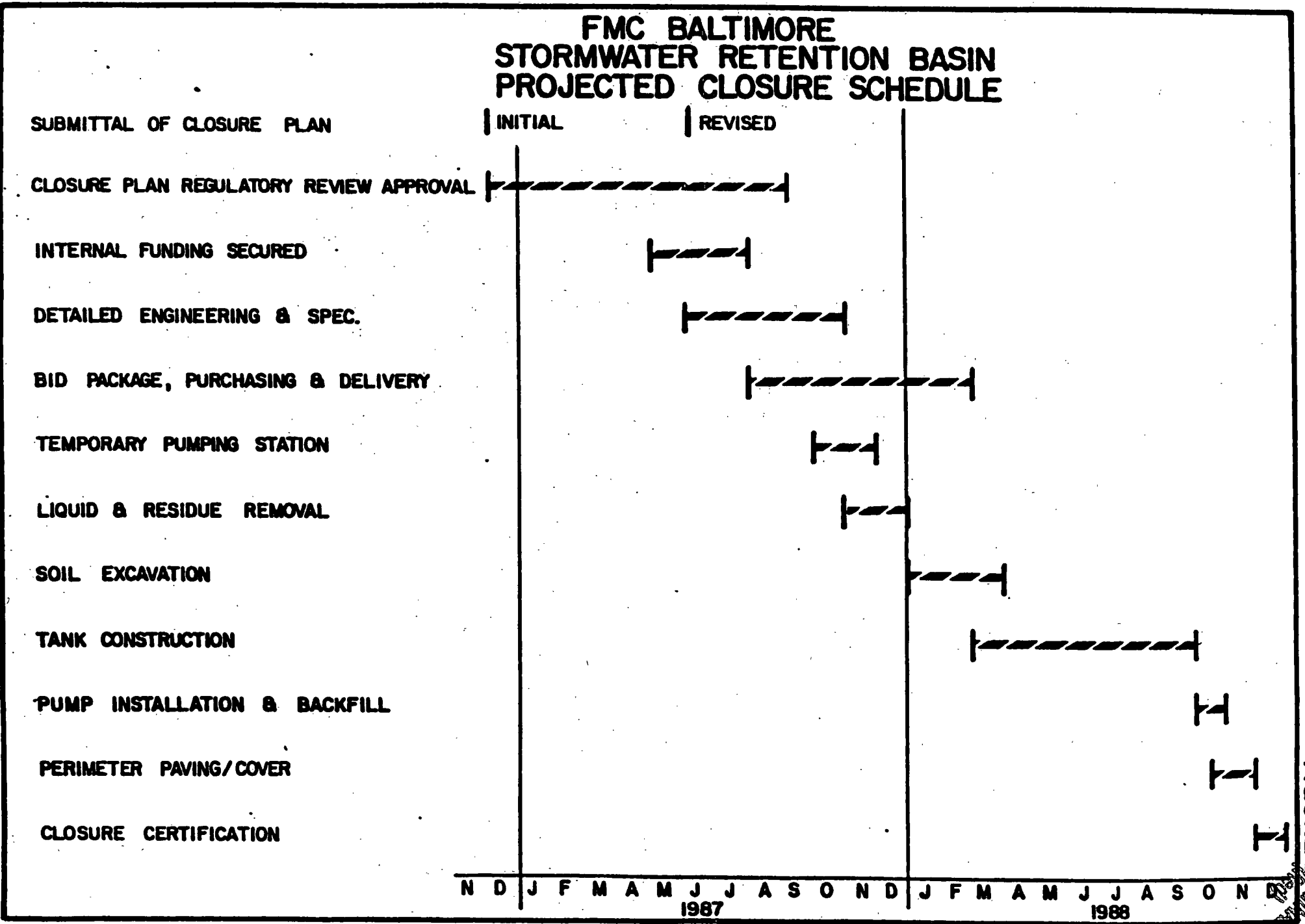

FMC BALTIMORE
STORMWATER RETENTION BASIN
PROJECTED CLOSURE SCHEDULE
SUBMITTAL OF CLOSURE PLAN
INITIAL
REVISED
CLOSURE PLAN REGULATORY REVIEW APPROVAL
INTERNAL FUNDING SECURED
DETAILED ENGINEERING & SPEC.
BID PACKAGE, PURCHASING & DELIVERY
TEMPORARY PUMPING STATION
LIQUID & RESIDUE REMOVAL
SOIL EXCAVATION
TANK CONSTRUCTION
PUMP INSTALLATION & BACKFILL
PERIMETER PAVING/COVER
CLOSURE CERTIFICATION
N D J F M A M J J A S O N D J F M A M J J A S O N D
1987
1988

FIGURE 2

Appendices

APPENDIX A

STABILIZATION RESIDUE/FABRICATION DISPOSAL MANIFEST SUMMARY

APPENDIX A
STABILIZED RESIDUE DISPOSAL MANIFEST SUMMARY[1]

DATE	MANIFEST NO.	MASS (lbs)
11/22/87	90500	33380
	90501	32560
	90502	33980
	90503	32380
11/30/87	90504	25520
	90505	22840
	90506	22120
	90507	37140
	90508	31840
	90509	38960
	90510	32940
	90511	35440
	90512	30180
	90513	32040
12/2/87	90514	38160
	90515	41120
	90516	39440
	90517	33500
	90518	36540
	90519	41120
	90520	37280
	90521	35720
	90522	22960
	90523	37620
	90524	37560
11/4/87	90525	34080
	90526	35360
	90527	33220
	90528	37960
	90529	41940
	90530	40020
	90531	33800
	90532	36780
	90533	40560
	90534	42960
	90535	42960
	90536	42980
	90537	38580
	90538	41160
	90539	40820
	90540	42480
	90541	39780
	90542	41860
	90543	38980

APPENDIX A
STABILIZED RESIDUE DISPOSAL MANIFEST SUMMARY[1]
(continued)

DATE	MANIFEST NO.	MASS (lbs)
12/8/87	90544	29200
	90545	34820
	90546	40100
	90547	40400
	90548	39220
	90549	35220
	90550	33580
	90551	36240
	90552	33360
	90553	34080
12/9/87	90554	33060
12/10/87	90555	37820
	90556	32920
	90557	34480
	90558	35460
	90559	37260
	90560	38400
	90561	35980
	90562	34300
	90563	35180
	90564	34160
	90565	35660
12/14/87	90566	41320
	90567	40720
	90568	41420
	90569	38140
	90570	40120
	90571	40100
	90572	39480
	90573	36100
	90574	41780
	90575	35700
12/16/87	90576	35480
	90577	37680
	90578	42620
	90579	41640
	90580	40700
	90581	46320
	90582	41000
	90583	42660
	90584	38700
	90585	377620
	90586	38640
	90587	38540
	90588	35460

APPENDIX A
STABILIZED RESIDUE DISPOSAL MANIFEST SUMMARY[1]
(continued)

DATE	MANIFEST NO.	MASS (lbs)
12/16/87	90589	35860
	90590	44760
	90591	36020
	90596	34760
	90597	34940
	90598	36820
	90599	40280
7/7/88	90103	43180
	90104	44000
TOTAL		3,632,120 (1816 tons)[2]

(1) Stabilized residue and FabriForm hauled to GSX Services of South Carolina Inc.Route #1, Pinewood, SC 29125, (803) 452-5003. SCD070375985 was 1816 tons. Approximate mass of components was as follows: residue (1097 tons), lime (215 tons), FabriForm and other concrete debris (504 tons).

(2) Estimated components:
residue - 1097 tons
lime - 215 tons
FabriForm and other concrete debris - 504 tons

ORIGINAL (Red)

APPENDIX B

SOIL SAMPLE FIGURE/TEST RESULTS

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date December 31, 1987

From A. P. Dean

cc DWHorgan
BLJohansen
CFKusiak
DWPalmer
AFShanta

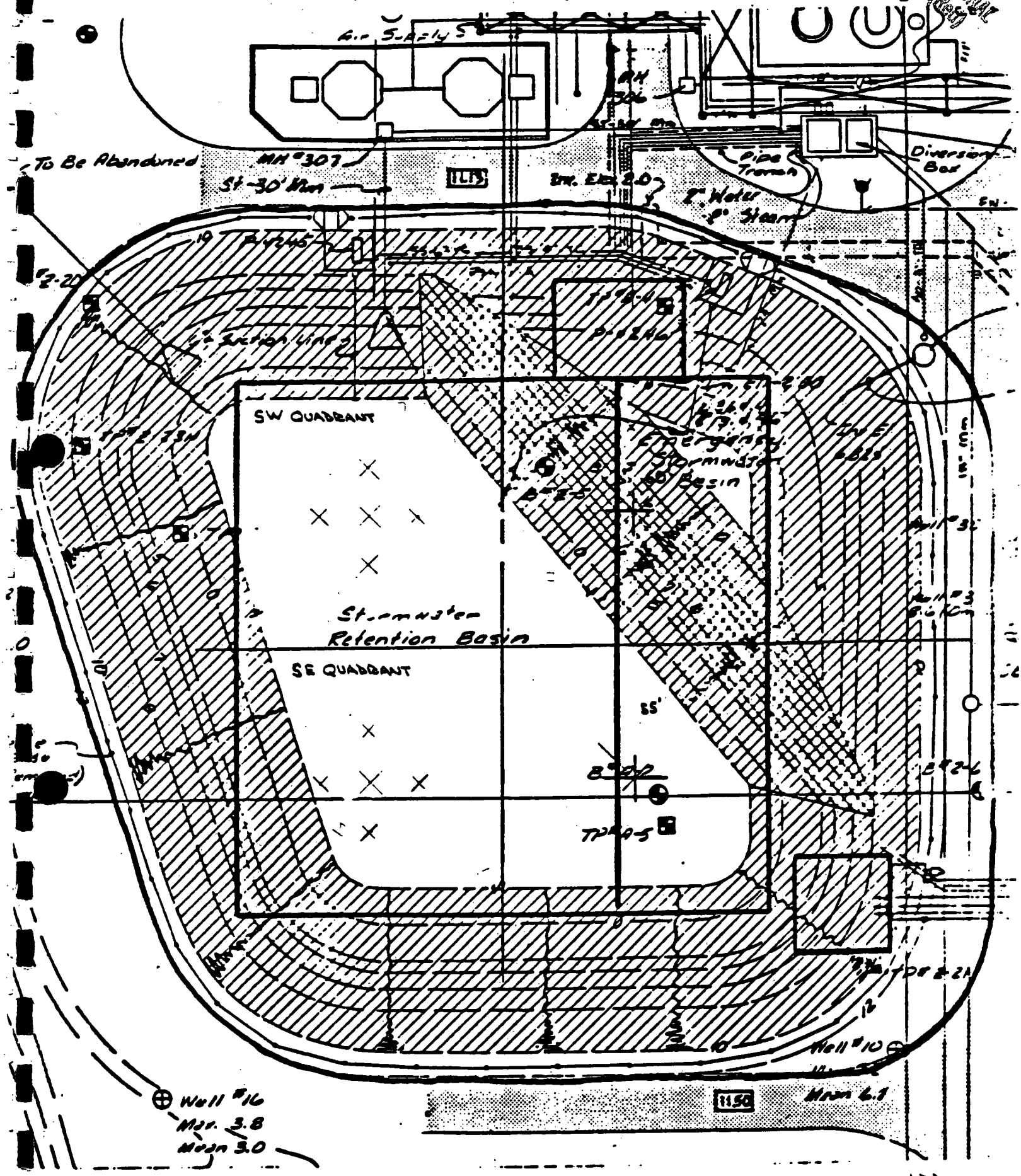
Subject RETENTION BASIN SOIL SAMPLES - SOUTH QUADRANTS

On this date, in accordance with the requirements of the Stormwater Retention Basin Closure Plan, soil samples were collected by this writer in the two (2) south quadrants of the Basin following the Soil Testing Protocol - Section 02001 of the plan.

The attached print identifies sampling points. Only south quadrant sampling was conducted this date to accomodate construction schedules and sampling logistics. Sampling of the two (2) north quadrants will be conducted at a later date when construction grades in that area are achieved.

Samples were stored in a glass quart container, duly labeled and forwarded to the plant laboratory for the analyses set forth in the Protocol.

ct



Retention Basin - Closure Plan - Soil Sampling
DECEMBER 31, 1987 10:15-11:00 AM
X = 3/4 x 3" Levan Core Sample

1 MM = 1 FOOT

APDEAN
12-31-87

ORIGINAL (Red)

PLANT FMC
Smpl. Date 12-31-87
Smpl. Time 10:30 AM
Req'd. By A.P. DEAN
Smpl. ID SE-Soil
Batch No. Retention Basin
Analyses Req'd. Closure Plan Spec 02001
Arr. Time
Comp. Time
Shift
AU

PLANT FMC
Smpl. Date 12-31-87
Smpl. Time 10:45AM
Req'd. By A.P DEAN
Smpl. ID SW Soil
Batch No. Retention Basin
Analyses Req'd. Closure Plan Spec 02001
Arr. Time
Comp. Time
Shift
AU

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date January 13, 1988

From A. P. Dean

cc DWHorgan
BLJohansen
CFKusiak
DWPalmer
AFShanta

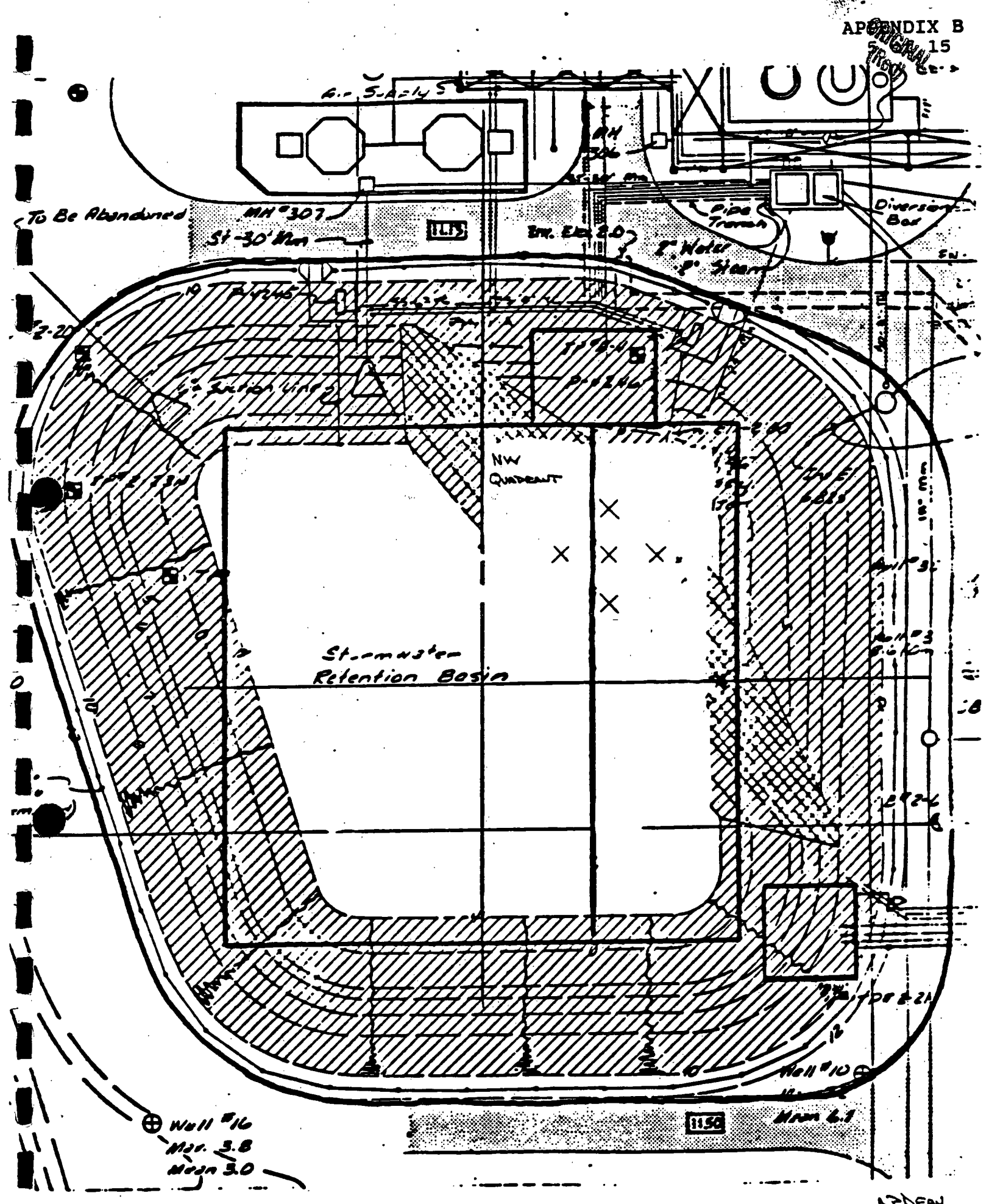
Subject RETENTION BASIN SOIL SAMPLE -
NORTH WEST QUADRANT

On this date, in accordance with the requirements of the Stormwater Retention Basin Closure Plan, a soil sample was collected by this writer in the north west quadrant of the Basin following the Soil Testing Protocol - Section 02001 of the plan.

The attached print identifies sampling points. Only north west quadrant sampling was conducted this date to accomodate construction schedules and sampling logistics. Sampling of the north east quadrant will be conducted at a later date when construction grades in that area are achieved.

Samples were stored in a glass quart container, duly labeled and forwarded to the plant laboratory for the analyses set forth in the Protocol. Ms. Monica Miller of the Waste Management Administration, State Department of the Environment observed the sampling.

ct



Retention Basin - Closure Plan - Soil Sampling

January 13, 1988 1:30 - 2:00 PM

1 MM = 1 Foot

APDEAN
1-13-88

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To B. L. Johansen, A. F. Shanta

Date January 13 , 1988

From A. P. Dean

cc

Subject RETENTION BASIN SOIL SAMPLE - NORTHWEST QUADRANT

Accompanying this memorandum is a sample of the above referenced material which is submitted for analyses. As you know the Stormwater Retention Basin Closure Plan requires that soil samples be collected from four (4) quadrants of the former Basin when all wastes have been removed and construction grades for the new tank have been met.

At this time, only the northwest section of the construction area is ready; accordingly the sample is labeled NW (north west quadrant). The sample consists of five (5) core subsamples collected from the quadrant. One (1) composite sample is to be prepared from the five (5) subsamples.

The resultant composite is to be analyzed for the following materials which have been or could have been discharged to the Basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

For your records, I have attached a copy of the specific Soil Testing Protocol - Section 02001 from the Closure Plan. Sampling of the remaining northeast quadrant will be done at a later date when construction grades in that area are achieved and pile installation is completed.

ct

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date February 17, 1988

From A. P. Dean

cc DWHorgan
BLJohansen
CFKusiak
DWPalmer
AFShanta

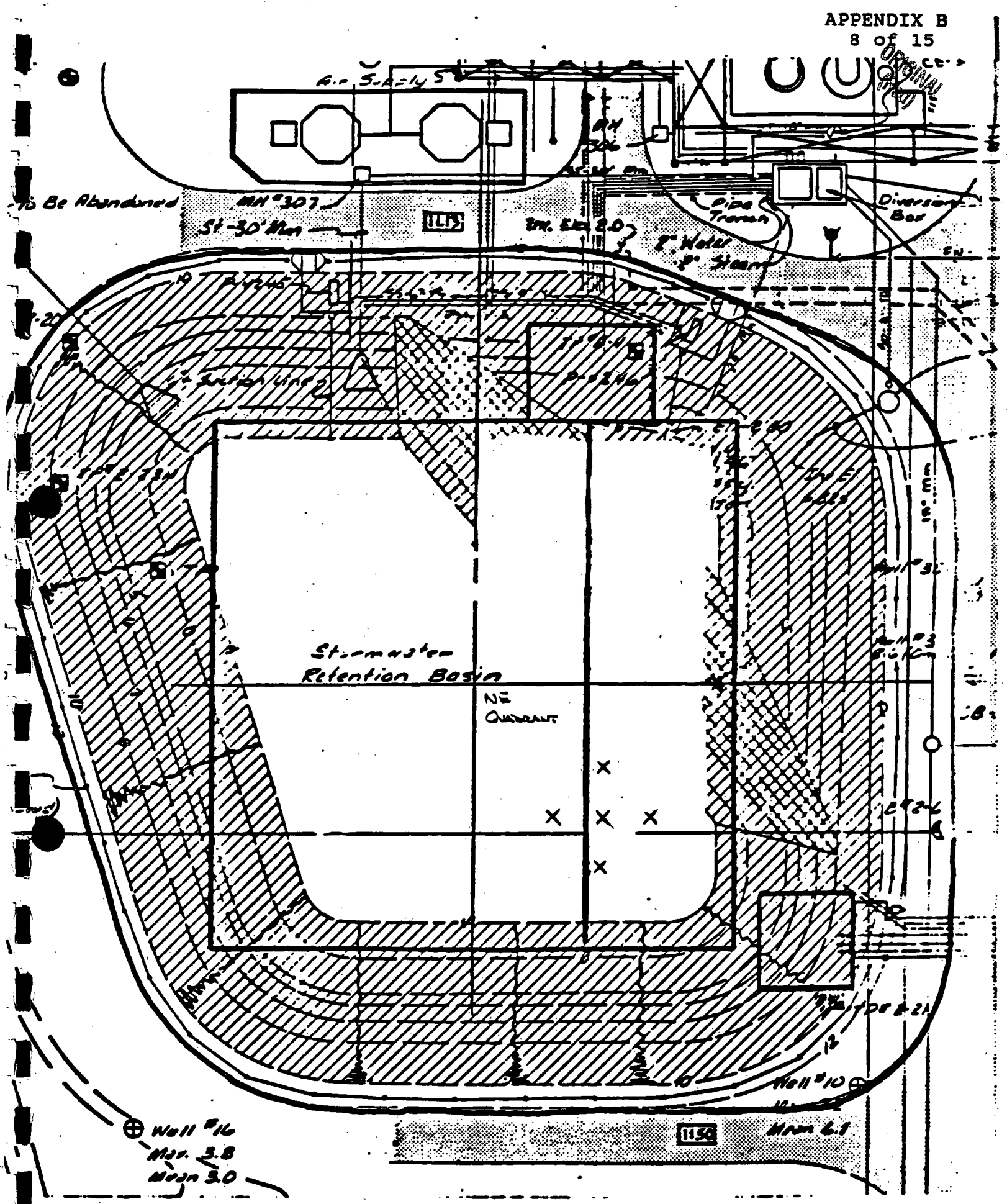
Subject RETENTION BASIN SOIL SAMPLE - NORTH EAST QUADRANT

On this date, in accordance with the requirements of the Stormwater Retention Basin Closure Plan, a soil sample was collected by this writer in the north east quadrant of the Basin following the Soil Testing Protocol - Section 02001 of the plan.

The attached print identifies sampling points. Only north east quadrant sampling was conducted which concludes the State required soil sampling aspects ofthe project.

Samples were stored in a glass quart container, duly labeled and forwarded to the plant laboratory for the analyses set forth in the protocol.

ct



Retention Basin - Closure Plan - Soil Sampling

February 17, 1988 9:00-9:30 am

1 mm = 1 Foot

APBEAN
2-17-88

ORIGINAL (Red)

PLANT FMC	Arr. Time
Smpl. Date 1-13-88	Comp. Time
Smpl. Time 1:50 PM	Shift
Req'd. By A.P. DEAN	AU
Smpl. ID NW-Soil	Batch No. DETENTION BASIN
Analyses Req'd. CLOSURE PLAN SPEC 02001	

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To B. L. Johansen/A. F. Shanta

Date February 17, 1988

cc

From A. P. Dean A.P.Dean

Subject RETENTION BASIN SOIL SAMPLE - NORTHEAST QUADRANT

Accompanying this memorandum is a sample of the above referenced material which is submitted for analyses. As you know the Stormwater Retention Basin Closure Plan requires that soil samples be collected from four (4) quadrants of the former Basin when all wastes have been removed and construction grades for the new tank have been met.

With the collection of the northeast sample the required soil testing of the Retention Basin is concluded. The sample consists of (5) core subsamples collected from the quadrant. One (1) composite sample is to be prepared from the five (5) subsamples.

The resultant composite is to be analyzed for the following materials which have been or could have been discharged to the Basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

For your records, I have attached a copy of the specific Soil Testing Protocol - Section 02001 from the Closure Plan.

ct

SOIL TESTING PROTOCOL - SECTION 02001

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Testing of remaining soils for contamination from Stormwater Retention Basin contents.

B. Related Work Specified Elsewhere

1. Earthwork: Section 02000
2. Selected Fill: Section 02002
3. Solidification and Removal of Accumulated Sludge: Section 02003
4. Cover Materials and Installation: Section 02004
5. Bituminous Concrete Pavements: Section 02005

PART 2 - EXECUTION

2.01 SAMPLING

A. Sample Collection

1. The area located under the proposed 110 x 110 foot tank will be divided into four quadrants subsequent to excavation to construction required elevations.
2. Five (5) samples shall be collected from each quadrant: one from the center of each quadrant, and four at a distance of 10 feet from the center in each of four compass direction using 3/4 inch diameter Lexan® tubing.
3. The samples shall be collected by driving the Lexan® tube to a depth of 3 inches ±0.5 inches and withdrawing the tubing.
4. One (1) composite sample will be prepared for each quadrant from the five (5) subsamples. The composite samples will be stored in a glass container which will be labeled as to sample location, date and sampler.

ORIGINAL (Red)

02001-2
1676.027

SOIL TESTING PROTOCOL - SECTION 02001

B. Sample Testing

1. The four composite samples will be submitted to a laboratory for analyses. The analytical program will include the following substances which have been or could have been discharged to the retention basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

- END OF SECTION -

discussed w/ Al Shanta 10/8/87

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To B. L. Johansen, A. F. Shanta

Date December 31, 1987

cc

From A. P. Dean A.P. Dean

Subject RETENTION BASIN SOIL SAMPLES - SOUTH QUADRANTS

Accompanying this memorandum are two (2) samples of the above referenced material which are submitted for analyses. As you know the Stormwater Retention Basin Closure Plan requires that soil samples be collected from four (4) quadrants of the former Basin when all wastes have been removed and construction grades for the new tank have been met.

At this time, only the south section of the construction area is ready; accordingly the two (2) samples are labeled SW (south west quadrant) and SE (south east quadrant). Each of the two (2) samples consists of five (5) core subsamples collected from the respective quadrant. One (1) composite sample is to be prepared for each quadrant from the five (5) subsamples..

The two (2) resultant composites are to be analyzed for the following materials which have been or could have been discharged to the Basin:

Orthonitrophenol
Orthonitrophenol methyl ether (Ether)
7-Hydrogen
7-Nitro
Carbon tetrachloride
Benzene
Monochlorobenzene
Chloroform
Toluene
Claisen
Isobutenyl

For your records, I have attached a copy of the specific Soil Testing Protocol - Section 02001 from the Closure Plan. Sampling of the two (2) north quadrants will be done in early January 1988 when construction grades in that area are achieved.

ct

FMC Agricultural Chemical Group
Baltimore

Interoffice

To A. P. Dean

Date January 29, 1988

From A. F. Shanta as

cc JAPalmer
DWPalmer
DWHorgan

Subject RETENTION POND CLOSING ANALYSES

The samples of soil that you took for the retention pond closing have been analyzed. Three samples were received labeled as follows:

SW soil 12/31/87 at 1045
SE soil 12/31/87 at 1030
NW soil 1/13/88 at 1350

Upon receipt the samples were refrigerated at 4°C. Before analysis, the soil in the five Lucite tubes comprising each sample were blended together. Portions of the blend were used for the analyses. The specified volatile components were determined by GC/MS using a purge and trap technique and the semi-volatile materials, after extraction, using GC ESTD (ref. FMC Methods GW-1, GW-7 and P-100). Detection limits were approximately 0.1 ppm and 10 ppm respectively for the volatiles and semi-volatiles. Results for the various parameters are given below:

	Amount in ppm		
Component	SW	SE	NW
Benzene	ND	ND	ND
Toluene	ND	ND	ND
Chloroform	ND	ND	ND
Chlorobenzene	0.2	2.1	0.1
Carbontetrachloride	ND	ND	ND
7-hydrogen	19	20	12
ONP	ND	ND	ND
Claisen	ND	14	22
Isobutenyl	ND	ND	ND
ONPME	162	253	175
7-nitro	44	49	36

elr

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To A. P. Dean

Date February 23, 1988

From M. L. Schrock

cc JAPalmer
DWPalmer
DWHorgan
AFShanta

Subject RETENTION POND CLOSING ANALYSIS

The final soil sample for the retention pond closure plan was taken and labelled NE Soil February 17, 1988 @ 0930. Please refer to your memo from A. F. Shanta dated January 29, 1988 and titled the same as this one for the methods of analysis used. The detection limits were approximately the same as before; 0.1ppm and 10ppm respectively for the volatiles and semi-volatiles with the results given below.

Component	Amount in ppm
Benzene	ND
Toluene	ND
Chloroform	ND
Chlorobenzene	ND
Carbon tetrachloride	ND
7-hydrogen	25
ONP	ND
Claisen	20
Isobutenyl	10
ONPME	301
7-nitro	62

elr

APPENDIX C

DECONTAMINATION WIPE TEST RESULTS

FMC CORPORATION
Agricultural Chemical Group
Baltimore, Maryland

Wipe Sampling Procedure

Discussion

Wipe testing is an indirect measure of the hazards encountered from skin contact with chemicals. If enough sites are chosen for wiping, the body of data accumulated indicates the general level of contamination. The amount of chemicals found during wipe sampling is dependent upon the nature of the surface, the desorbing liquid, the size of the area wiped, the original chemical deposition, and many other factors. This method provides for consistency in sampling, thereby reducing the number of variables present in this type of analysis. This method is consistent with the ACG method prepared by T. J. Clark.

Analytes - Any chemical that comes in contact with work surfaces, and leaves a non-volatile residue. This includes, but is not limited to, Ethion® and Pounce®.

Matrix - Any work surface where chemical residues exist. Typical areas may be valve handles, desk tops, hand rails, eating areas, door handles, and hands.

Procedure - Wiping Surface with a Kim-Wipe® moistened with isopropyl alcohol, desorbing with solvent, and gas chromatographic (GC) analysis.

Limit of Detectability

Variable, depending on the gas chromatograph and the detector. However, usually all components have a limit of detectability between 0.1 ug and 2.0 ug.

Apparatus

1. Box of Kim-Wipe® Disposable Wipes" - 5 x 8 - 1/2 inches.
2. Box of disposable plastic or neoprene gloves.
3. Bottle of rubbing alcohol (containing 70% isopropyl alcohol by volume in water).
4. Box of screw-cap glass vials with teflon cap liner for holding "wipe" samples for analysis in the laboratory.
5. Labels and tape.

Reagents

1. All chemicals must be A.C.S. reagent grade quality or better.

2. Isopropyl alcohol, A.C.S. reagent grade; V.W.R. catalogue #JT-9080-3.

Procedure

1. Dilute reagent grade isopropyl alcohol to 70% with distilled water. Mix well.

2. Mark off an area of 100 square centimeters with tape. This is the usual size of an area that is wiped. For areas that are not flat, such as door handles, the entire area is wiped.

3. Wear clean disposable gloves whenever taking "wipe" samples. This practice avoids contamination of the "Kim-Wipe®" by the hand and prevents skin contact with any toxic substances.

4. Remove a "Kim-Wipe®" tissue and fold the completely open tissue in half three times.

5. For WET "wipe" samples, add approximately 20 drops of the 70% isopropyl alcohol solution to the folded "Kim-Wipe®".

6. Go to the sample location and wipe the entire area with the "Kim-Wipe®". Wipe the surface firmly and completely, but not with sufficient hand pressure to damage the "Kim-Wipe®".

7. Fold the dirty side of the "Kim-Wipe®" tissue inward and wipe the same surface again.

8. Fold the dirty side inward and wipe the same surface a third time.

9. Fold the dirty side inward once again and insert it into the mouth of the glass vial. Place the cap on the vial, and mark the number or identity of the sample on the outside.

10. Wipe gloves clean after taking each sample with a clean paper towel moistened with water or isopropyl alcohol. It is suggested that gloves be changed or discarded after taking "wipe" samples in heavily contaminated areas where deposits are easily removed, or after every 10 "wipe" samples have been taken.

APPENDIX F

COMPACTED CLAY TEST RESULTS

File 10.6.0

ORIGINAL (Red)

Professional Service Industries, Inc.
PTL Division

REPORT OF INSPECTION SERVICES

ESTED FOR:	FMC Agricultural Chemical Group 1701 E. Patapsco Avenue Box 1616 Baltimore, Maryland 21203 Attn: Mr. Clem Kusiak	PROJECT:	FMC Retention Pond Baltimore, Maryland P. O. No. 058940
DATE:	July 15, 1988	OUR REPORT NO.:	427-80004-095

REMARKS:

SUMMARY OF INSPECTION

As requested, a PSI representative was on site between 10:15 am and 11:15 am to monitor and test fill placements in area around the west, north, and east side 10' off the pond.

These services were performed on a full-time basis.

CONDITIONS REQUIRING CORRECTION - CORRECTIVE ACTION TAKEN

Attachments: Field Density Tests Report
Sketch

Respectfully submitted,
Professional Service Industries, Inc.

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FMC RETENTION POND
Client's Name: FMC
General Contractor: BON GIOVANNI
Excavator: BON GIOVANNI

PSI Job No.: 427- 80004
Client Job No.:
Date: 7-15-88
Weather: SUNNY Temp. (°F): 95

2/3

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION RETENTION POND
1	16.5	94.7	1	90	90.0	✓			0	10'E ALONG WEST SIDE
2	14.2	95.4			90.7	✓			0	10'W 20'N FROM NE CORNER
3	17.8	96.8			91.6	✓			0	10'E 10'N FROM SE CORNER

Compaction Equipment Used: Vibratory ☐ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☐ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☐ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☐ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
	105.3	16%	☐	☐
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks:

Technician: Date: 7-15-88 Approved: Field Copy Given To Client Yes ☐ No ☐

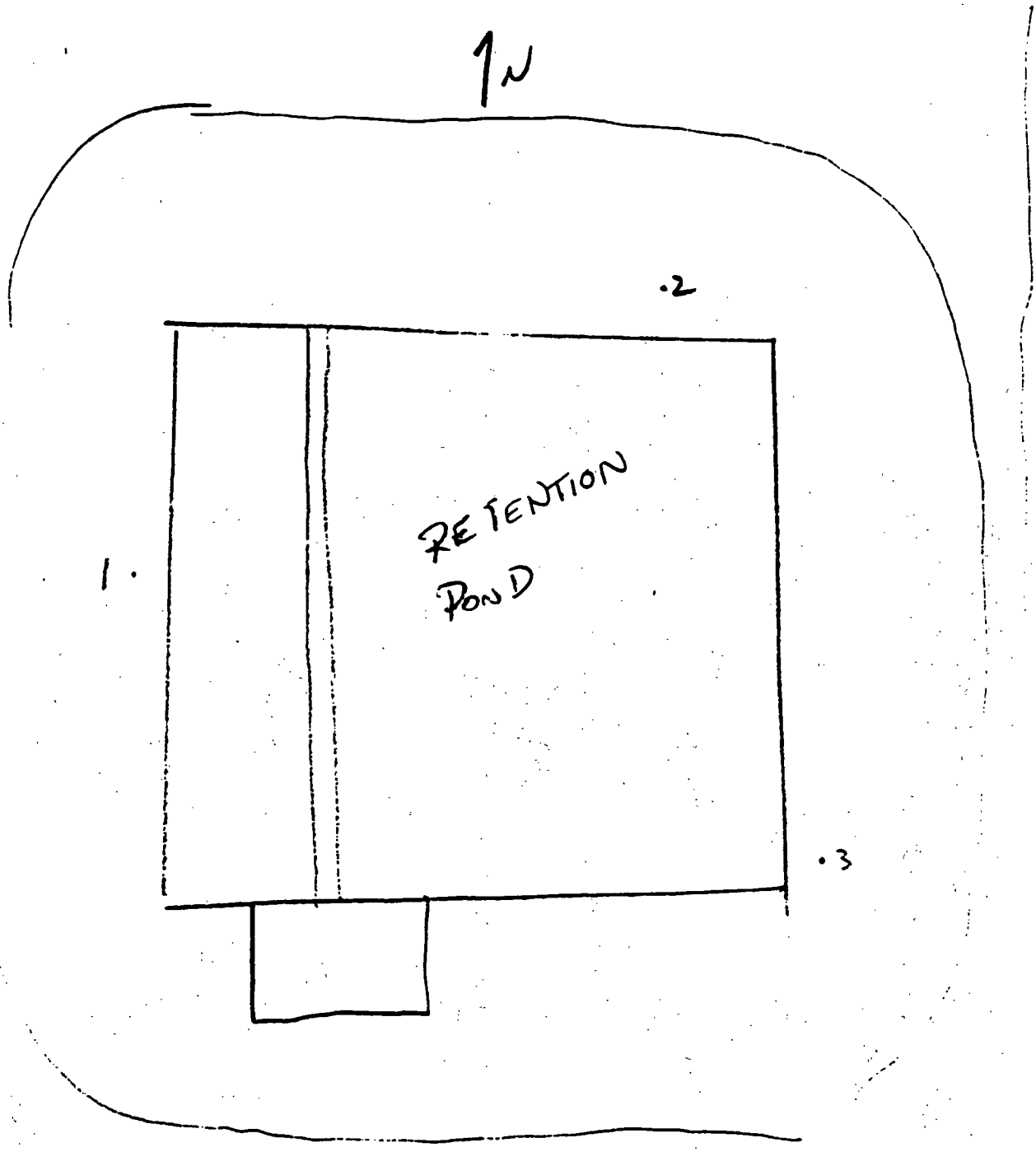
APPENDIX F
2 of 7
Revised (Rev)

Professional Service Industries, Inc.
PTL Division

606 BARKWOOD COURT
LINTHICUM, MARYLAND 21090
TEL: 301-789-3224
FAX: 301-789-3233
WASHINGTON AREA: 861-2825

ORIGINAL

SKETCH



Sketch No	PTL-II Order No.	Lab No.	Page 3 of 3

ORIGINAL (Red)

Professional Service Industries, Inc.
PTL Division

REPORT OF INSPECTION SERVICES

TESTED FOR: FMC
Agricultural Chemical Group
1701 E. Patapsco Avenue
Box 1616
Baltimore, Maryland 21203

Attn: Mr. Clem Kusiak

DATE: June 28, 1988

PROJECT: FMC
Retention Pond
Baltimore, Maryland
P. O. No.: 058940

OUR REPORT NO.: 427-80004-091

REMARKS:

SUMMARY OF INSPECTION

As requested, a PSI representative was on site between 11:30 am and 3:30 pm to monitor and test fill placements in area around retention pond 50' surrounding.

These services were performed on a full-time basis.

CONDITIONS REQUIRING CORRECTION - CORRECTIVE ACTION TAKEN

During our visit non-compliances were encountered regarding fill placements.

These non-compliances along with corrective measures are listed in the attached test reports.

Attachments: Field Density Tests Report
Sketch

Distribution: Client (1)

Respectfully submitted,
Professional Service Industries, Inc.

PSI Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FAI [illegible] Road
Client's Name: [illegible]
General Contractor: [illegible]
Excavator: [illegible]

PSI Job No.: 427- 8C04
Client Job No.:
Date: 6/28/88
Weather: Sunny Temp. (°F): 80°

2/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
1	20.4	7[illegible]	1	95	91.4	✓			-14"	80'S 5W From North corner
2	17.0	9[illegible]			91.1		✓	ART		30'W 40's " " "
3	17.6	[illegible]			86.3		✓	ART		10'W " " "
4	17.0	9[illegible]			93.1	✓				100's " " "
5	[illegible]	[illegible]			92.3	✓				70'S 30'E " " "
6	14.5	103.8			95.6	✓				40'S 30'E " " "
7	16.3	95[illegible]			90.8	✓		R-2		30'W 40's " "
8	15.4	9[illegible]			91.3	✓		R-3		10'W " " "
9	17.4	86.6					✓	ART		10'E 5'N " " "
10	18.7	93.8		↓		✓				20'S 30'E

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☑ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std Proctor	Mod. Proctor
1	105.3	16	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks: ~~[illegible]~~ #2,3 RE ROLLED AND PASSED

Technician: Bruce Cain Date: 6/28/88 Approved: Field Copy Given To Client Yes ☐ No ☐

ORIGINAL (RED)

APPENDIX F
5 of 7

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FMC RETENTION POND
Client's Name: FMC
General Contractor: BOUGIOUKOS
Excavator: BOUGIOUKOS

PSI Job No.: 427- 8[illegible]04
Client Job No.:
Date: 6/28/88
Weather: SUNNY Temp. (°F): 80°

3/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
1	16.6	[illegible]	1	90	93.8	✓		R-9	-1'	10'E 5'N From the North corner
2										
3										
4										
5										
6										
7										

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☐ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
	[illegible]	16	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks:

Technician: [signature] Date: / / Approved: Field Copy Given To Client Yes ☐ No ☐

Original (Red)

APPENDIX F
6 of 7

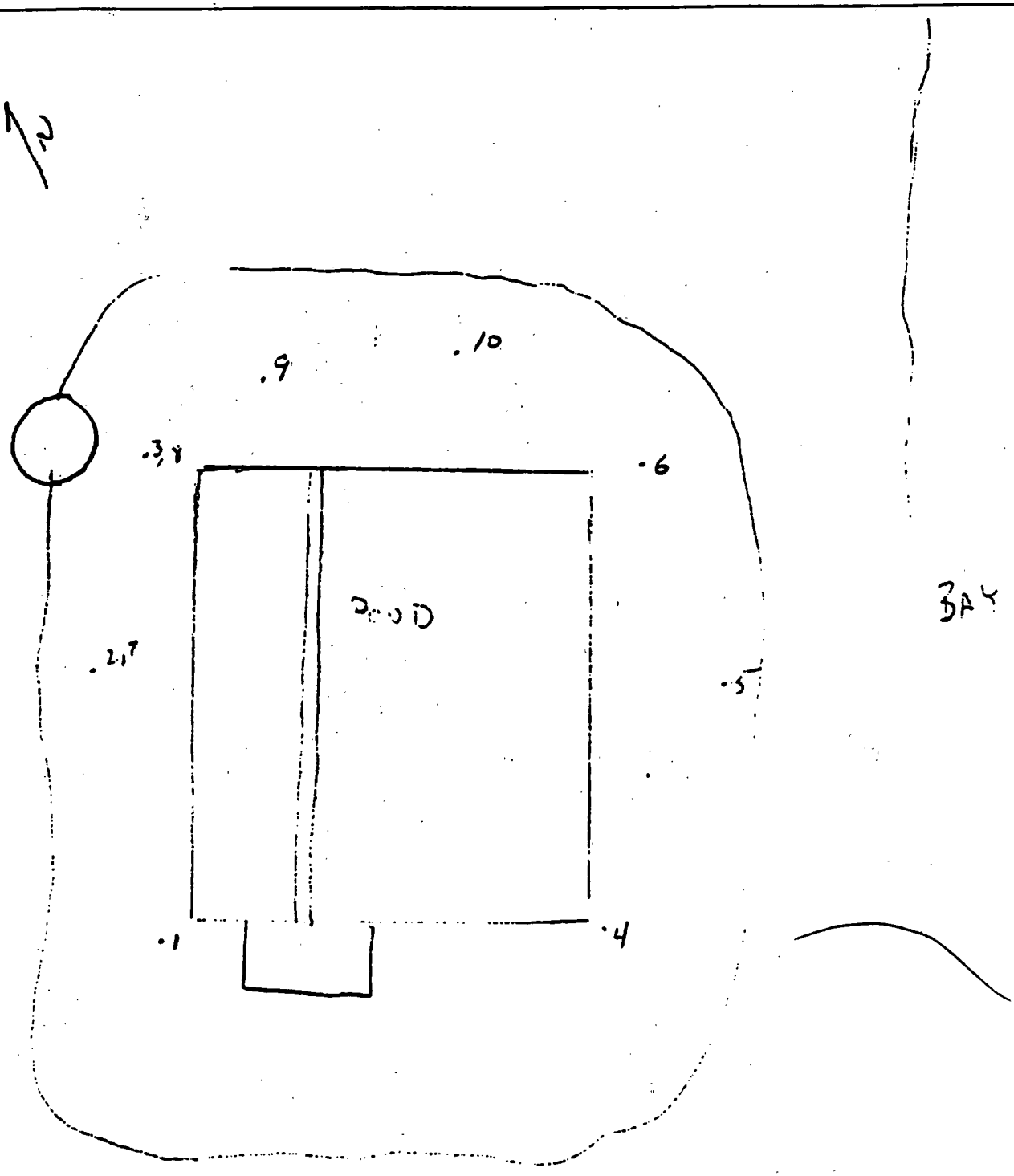
Professional Service Industries, Inc.
PTL Division

806 BARKWOOD COURT
LINTHICUM, MARYLAND 21090
TEL: 301-789-3224
FAX: 301-789-3233
WASHINGTON AREA: 281-2625

ORIGINAL (Red)

FMC

SKETCH



Sketch No. 1 | PTL-II Order No. | Lab No. | Page 1 of 1

APPENDIX G

COVER LAYER TEST RESULTS

ORIGINAL (Red)

GENSTAR

Genstar Stone Products Company
Executive Plaza IV
Hunt Valley, Maryland 21031
Telephone (301) 628-4000

June 1, 1988

Baltimore Asphalt Paving Co.
1320 N. Monroe Street
Baltimore, Maryland 21217
ATTN: John Elliott

RE: FMC - Retention Basin

Gentlemen:

This is to certify that the MD SHA-CR-6/GASB Crusher Run limestone as produced at our Texas, Maryland Quarry meets the requirements of the 1982 Maryland State Highway Administration specifications under Section 903 and City of Baltimore specifications under Article 20.02.

The following gradation analysis is based on the average of 48 individual tests.

SIEVE SIZE	2"	1 1/2"	#4	#10	#200
Texas CR-6/GASB % Passing	100	99.5	36.2	25.8	5.9
SHA Tolerance Range	100	90-100	29-49	--	2-12
Balto. City Spec.		100	25-55	15-45	0-12

This material complies with other specifications as set forth in the Maryland State Highway Administration and City of Baltimore requirements regarding deleterious substances, abrasion and soundness.

Respectfully submitted,

GENSTAR STONE PRODUCTS COMPANY

Ronald L. Heckel

RONALD L. HECKEL
Manager, Quality Control
Aggregates

RLH:kr

cc: J. Schwoerer

Exhibits

State of Maryland

DEPARTMENT OF THE ENVIRONMENT
201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201
AREA CODE 301 • 225-5647

William Donald Schaefer
Governor

Martin W. Walsh, Jr.
Secretary

October 6, 1987

CERTIFIED MAIL
Return Receipt Requested

Mr. Darryl Palmer
Environmental Manager
FMC Corporation
Agricultural Chemicals Group
1701 East Patapsco Avenue - Box 1616
Baltimore, Maryland 21203

Dear Mr. Palmer:

The Waste Management Administration (WMA) has received no further comment concerning the closure of the storm water Rentention Basin, since the hearing held on September 17, 1986. The WMA approves the closure plan as modified by a letter from FMC dated July 30, 1987 and a letter from WMA dated August 4, 1987. In accordance with the approved closure plan the post-closure permit application shall be submitted within 15 days and closure operations shall begin within 90 days upon your receipt of this letter.

As the public notice of the hearing for the closure was provided at the same time as the public notice for the incinerator permit, there will be one invoice for both notices. You should receive the invoice shortly, as it will be included with the incinerator permit.

If you have any questions concerning this matter, please contact Ms. Monica Miller of my staff at (301) 225-5701.

Sincerely,

Ronald Nelson, Director
Waste Management Administration

RN/lak

cc: Mr. William E. Chicca
Mr. Alvin Bowles
Mr. Charles Lewis
Mr. Reid Rosnick
Ms. Monica Miller
Mr. John Humphries

ORIGINAL (Red)

INDUSTRIAL HYGIENE MANUAL
Method No. 14-A (Revision 1)
Date Issued: 10/10/86

11. Important Note: DRY "wipe" samples are to be taken in the same way as described above, with the omission of Step 5.

12. The vials are to be returned to the laboratory for subsequent analysis.

13. A fresh piece of "Kim-Wipe®" that has not been used should be submitted to the lab in a separate vial, for use as a blank.

Prepared by: Connie N. Johns
Approved by: Mary H. Grass
Date: February 13, 1987

ORIGINAL (Red)

FMC Agricultural Chemical Group
Baltimore

Interoffice

To File

Date July 20, 1987

cc FDHale-O'Brien & Gere

From A. P. Dean

Subject RETENTION BASIN CLOSURE PLAN - Wipe Test

Present closure plans call for the decontamination of equipment used in closure via water wash and steam cleaning. The State is suggesting that while acceptable, the decontamination requires verification by analytical, laboratory results.

For purposes of experimentation, wipe tests were conducted on hand rails at the Retention Basin to simulate "analytical work" following decontamination if the State insists on same.

Procedure/Methodology/Standards:

*Basis For Assessment

(1) Evaluate Potential Exposure to humans
(2) Max. allowable concentration based on:
  (a) For materials intended for re-use - use mammalian LD50
  (b) Area of surface to which human could be exposed - use "standard size" of 100 ft^2 (surface area of 4-55 gal drums; customarily 4 drums/pallet)
  (c) Avg. human body wgt. - 170# (77 kg)
  (d) Safety factor = 1/10 of LD_{50}
  (e) Contaminents to be evaluated individually

W = allowable wgt. of contaminant per $100cm^2$

$w = 100cm^2 \times 77\ Kg \times LD_{50} \times 1 \div 100ft^2 \times 929\ cm^2/ft2 \times 1$
$= 0.0083 \times LD_{50}$

*Potential Materials For Analysis

	LD_{50}	X .0083 X 1000 (mg→μg) =	Standard $=\mu g/100cm^2$
ONP	3100		25730
Ether	872		7237
7-H	2745		22783
7-NO_2	806		6690

ORIGINAL (Red)

	LD_{50} X	.0083 X 1000 (mg/µg) =	Standard $=\mu g/100cm^2$
CCl_4	1770		14691
Benzene	3800		31540
MC Benzene	1540		12782
Chloroform	800		6640
Toluene	5000		41500
Claisen	2000/4000		16600/33200
Isobutenyl	1300/4436		10790/36819

*Sampling and Analysis

On July 14, 1987 at approximately 2:00PM this writer and K. H. Beach of the process lab conducted two wipe tests of the hand railing surrounding the north retention basin pump station (see photo); prior to sampling the railings were washed with warm water only and dried.

The top and bottom rail were both wiped with 70% isopropyl alcohol, diluted with 5 ml. methylene chloride and analized by gas chromatography for ten (10) hydroxy cmpds (including those hydroxy compounds noted above). With a detection limit of approximately 25µg/100cm_2 no hydroxy materials were found.

ct

WIPE TEST: 7/14/87 @ 2:00 PM
Top & Bottom Rail of 7-OH North Ret. Basin Pump Station; washed w/ warm H2O

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)		ANALIZED BY	DECON.(Y or N)
	12-7-87 8:30AM	Liebherr 921 Excavator "bucket"	MH Beam AP Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-8-87	Yes
	12-7-87 8:30AM	Liebherr 921 Excavator Left Track	MH Beam AP Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johansen 12-8-87	Yes
	12-9-87 2:50 PM 12-10-87 11:05 AM	J.E. McCausland, Inc "Whole of a Pump" #4496 Pump Head (M5-13)	AP Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson	Yes
	12-9-87 2:50PM	J.E. McCausland, Inc "Whole of a Pump" # 4450 Pump Head	AP Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson	Yes
	12-22-87 8:55AM	Mixing Dumpster (lime) # 1285162	AP Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec	B. Johnson 12-22-87	Yes

* Industrial Hygiene Manual
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APPENDIX
ORIGINAL (Red)
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17

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

AMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)	ANALIZED BY	DECON.(Y or N)
	12-22-87 8:35AM	Mixing Dumpster (Sludge) #1285163	A.P Dean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	TB Johansen 12-22-87	Yes
	12-30-87 11:45AM	Mixing Dumpster (Sludge) # 1285166	APDean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 12-31-87	Yes
	12-30-87 11:50AM	Mixing Dumpster (Sludge) # 1285160	APDean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 12-31-87	Yes
	1-7-88 8:20AM	Komatsu Excavator PC 200 LC "Bucket"	APDean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 1-11-88	Yes
	1-7-88 8:30AM	Komatsu Loader WA-200 "Bucket"	APDean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	TB Johansen 1-11-88	Yes

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APPENDIX C
7 of 17
ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

SAMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)	ANALIZED BY	DECON.(Y or N)
	1-7-88 8:35AM	Decon. Trailer Clean Side Locker Handle & Front #3	ADBEAU	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B Johnson 1/11/88	NA - maintained in non-contaminated condition
	1-7-88 8:40AM	Decon Trailer Clean Side Door knob & Light Switch	ADBEAU	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 1/11/88	"
	1-7-88 8:45AM	Decon Trailer Clean Side Floor Area in Front of Lockers	ADBEAU	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 1/11/88	"
	1-29-88 8:15AM	C.J. Langenfelder Euclid # ER 99 Interior bed of dump	ADBEAU	7-H. ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	R. Johnson 1-29-88	Yes
	2-9-88 2:50PM	C.J Langenfelder Caterpillar D-5 # A-297 Left track	ADBEAU	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B Johnson 2-9-88	Yes

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(DOW TWIMS)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

PLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)		ANALIZED BY	DECON.(Y or N)
	2-8-88 2:[illegible]pm	C.J.[illegible] Caterpillar D-5 * A[illegible] Front Blade	APDenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec's	B. Johnson 2-9-88	Yes
	2.9-88 8:18PM	C.J Langefelder Caterpillar D3B #A371 Left tread	APDenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec's	B. Johnson 2-10-88	Yes
	2-9-88 8:15AM	C.J Langefelder Caterpillar D3B #A371 Front Blade	APDenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec's	B. Johnson 2-10-88	Yes
	2-17-88 9:00am	C.J. Langefelder 383 Crane - Track tread	APDenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	w/in spec's	B. Johnson 2-18-88	Yes
	2-17-88 1:00 PM	Dirt from stump pan of Caterpillar D-5	APDenn sample received from C.J. Langefelder to P. Maslin	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO	No peaks For Hydroxy compds; general petrol. products	M. Schrock 2-17-88	Yes

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ORIGINAL (red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (μG/100CM^2)	ANALIZED BY	DECON.(Y or N)
	2-22-88 3:00Pm	C.J Langenfelder SH-282 Gradall Bucket	ADDean	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 2-22-88	Yes
	2-25-88 1:53Pm	C.J. Langenfelder Bantam C-266 Bucket (Koehring SH246)	CBRahen	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B Johnson 2-26-88	Yes
	2-29-88 1:50PM	DRAG beam used in BASIN clean-out	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 3-1-88	Yes
	3-2-88 4:00 Pm	Multiple sections of wooden support mats 2 Samples	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 3-3-88	Yes
	3-3-88 3:10 Pm	Euclid Dump Truck R-103	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 3-7-88	Yes

* Industrial Hygiene Manual Method # 14-A

APPENDIX C
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ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

SAMPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)	ANALIZED BY	DECON.(Y or N)
	3-3-88 3:15pm	Clam Bucket # 34940	ARDEN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-7-88	
	3-3-88 3:20pm	Cement Bucket # OB-68 R 2390.01	ARDEN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-7-88	
	3-3-88 3:25pm	Bucyrus - Erie 350 Excavator TRACK	ARDEN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-7-88	
	3-3-88 3:30pm	Bucyrus- Erie 350 Excavator Bucket	ARDEN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johansen 3-7-88	
	3-7-88 1:45pm	Dcon trailer dirty side - door knob light switch (inside)	ARDEN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B Johansen 3-9-88	

* INDUSTRIAL HYGIENE MANUAL Method # 14-A

(FSV) ORIGINAL

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS ($\mu G/100CM^2$)	ANALIZED BY	DECON.(Y or N)
	3-7-88 1:50pm	Decon trailer floor of laboratory	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 3-9-88	
	3-7-88 2:00pm	Decon trailer clean side - door knob light & switch (inside)	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	R. Johnson 3-9-88	
	3-8-88 10:00am	CAT EXCAVATOR - 950 H-116 Blade	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 3-9-88	
	3-8-88 10:00am	Cherry Picker 3H-256 Hook & Pulley	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	B. Johnson 3-9-88	
	3-8-88 10:00	I-Beams 20% sampled; all decon'd 4 Samples	ADDEAN	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec all 4 samples	R. Johnson 3-9-88	

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ORIGINAL (Red)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

MPLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (μG/100CM^2)	ANALIZED BY	DECON.(Y or N)
	3-10-88 1:10pm	C.J.L. office trailer Floor area	ADBenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in specs	B Johnson 3-11-88	yes
	3-10-88 1:15pm	CJL. office trailer Door knob & light switch	ADBenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in specs	B. Johnson 3-11-88	yes
	8-30-88 9.00Am	Spoil Area Asphalt Pad SW-corner	ADBenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in specs	D. Johnson 9-7-88	yes
	8-30-88 9.00Am	Spoil Area Asphalt Pad SE-corner	ADBenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in specs	D. Johnson	yes
	8-30-88 9.00Am	Spoil Area Asphalt Pad NE-corner	ADBenn	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in specs	D Johnson	yes

* INDUSTRIAL HYGIENE MANUAL Method # 14-A 10-10-86

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(DRAFT)

7-OH RETENTION BASIN

DECONTAMINATION & WIPE TESTING*

PLE I.D.	DATE/TIME	EQUIPMENT IDENTIFICATION	SAMPLED BY	RESULTS (μG/100CM^2)	ANALIZED BY	DECON.(Y or N)
	8-30-89 9:00AM	Spoil Area Asphalt Pad NW-corner	Al-Lahi	7-H ONPME CLAISEN ISOBUTENYL 7-NITRO w/in spec	R Johnson	yes
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		
				7-H ONPME CLAISEN ISOBUTENYL 7-NITRO		

* INDUSTRIAL HYGIENE MANUAL Method # 14-A

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ORIGINAL Copy

APDean

7-OH RETENTION BASIN
SHEET PILES
Decontamination and Wipe Testing*

Sheet No.	Sample Date/Time	Sampled By	Results (ug/100 cm^2)	Analized By	Decon. Yes/No
#15	6-3-88 2:45PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in spec	B. Johnson	Yes
#16	6-3-88 2:50PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in spec	B. Johnson	Yes
#17	6-3-88 2:55PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in spec	B Johnson	Yes
#18	6-3-88 3:00PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in spec	B Johnson	Yes
			7-H - ONPME - Claisen - Isobutenyl 7-Nitro		

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APDean

7-OH RETENTION BASIN
SHEET PILES
Decontamination and Wipe Testing*

Sheet No.	Sample Date/Time	Sampled By	Results (ug/100 cm^2)	Analized By	Decon. Yes/No
#61	5-26-88 3:20 PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johansen	Yes
#81	6-1-88 9:00AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johansen	Yes
#85	6-1-88 9:05 Am	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johansen	Yes
#86	6-1-88 9:10 Am	A.P.Dean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johansen	Yes
#89	6-1-88 9:15AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johansen	Yes

*Industrial Hygiene Manual
Method #14-A
10/10/86

APDean

7-OH RETENTION BASIN
SHEET PILES
Decontamination and Wipe Testing*

Sheet No.	Sample Date/Time	Sampled By	Results (ug/100 cm^2)	Analized By	Decon. Yes/No
#44	5-26-88 7:10AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johnsen	Yes
#40	5-26-88 7:15AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johnsen	Yes
#49	5-26-88 7:20AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johnsen	Yes
#45	5-26-88 7:25AM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B Johnsen	Yes
#57	5-26-88 3:15PM	APDean	7-H - ONPME - Claisen - Isobutenyl 7-Nitro w/in specs	B. Johnsen	Yes

*Industrial Hygiene Manual
Method #14-A
10/10/86

(pay) ORIGINAL TWINGI

APPENDIX D

CLAY SOURCE TEST DATA

File 10.6.0

your copy for F
& here copy.

ORIGINAL (Red)

DW H

Professional Service Industries, Inc.
PTL Division

June 23, 1988

FMC
Agricultural Chemical Group
1701 East Patapsco Avenue
Baltimore, Maryland 21226

Attention: Mr. Clem Kusiak

RE: Laboratory Test Results
Sample: Campbell Sand & Gravel
FMC Retention Pond
Baltimore, Maryland
PSI No.: 427-80004-090

Gentlemen:

As requested, Professional Service Industries, Inc. performed laboratory tests on the above referenced materials. Test results are as follows:

Maximum Dry Density and Optimum Moisture

The maximum dry density and optimum moisture of the soil was determined per ASTM D-1557 Method A, test method for Moisture-Density Relations of Soils. The maximum dry density was determined to be 105.3 pounds per cubic foot. The optimum moisture was determined to be 16.0%.

Additional information of this test is enclosed.

Liquid Limit, Plastic Limit, and Plasticity Index

The liquid limit, plastic limit, and plasticity index of the soil was determined per ASTM D-4318-84. The soil was determined to have a liquid limit of 48, a plastic limit of 26, and a plasticity index of 22.

Per the unified Soil Classification System the material is considered to be a type of ML-CL material. A copy of the Unified Classification chart is enclosed for your information.

Permeability Test

The coefficient of permeability for this material at 95.3% compaction is 3.003×10^{-8} cm/sec. Material will need to be processed to break up material.

If you have any questions, feel free to contact me at your convenience.

Respectfully submitted,
PTL Division

Jeffrey A. Grueter
Division Manager

JAG:sml

Enclosures

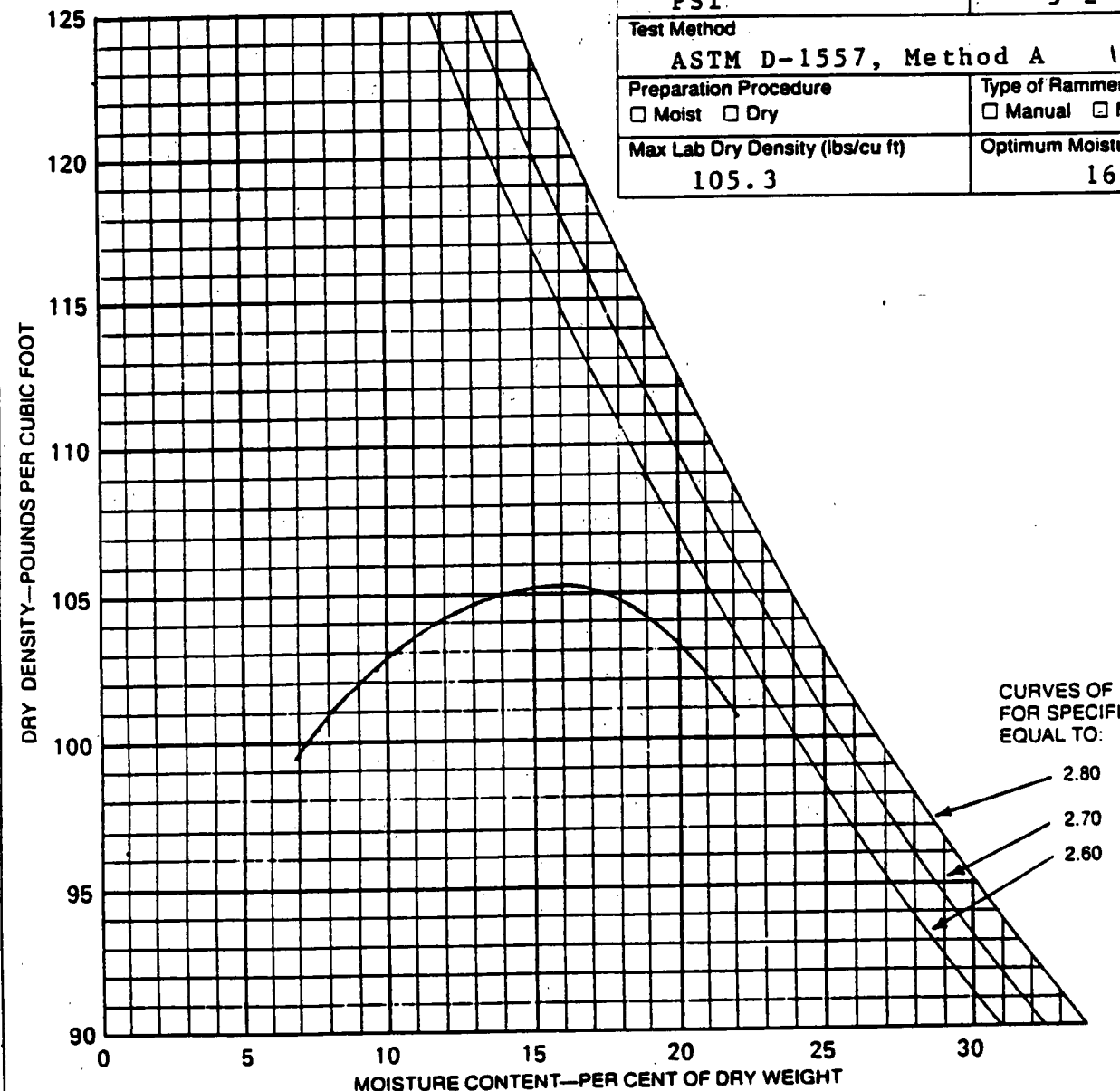
ORIGINAL (Red)

Professional Service Industries, Inc.
PTL Division

806 Barkwood Court, Suite K
Linthicum, Maryland 21090
301/789-3224

MOISTURE DENSITY RELATIONSHIP TEST REPORT

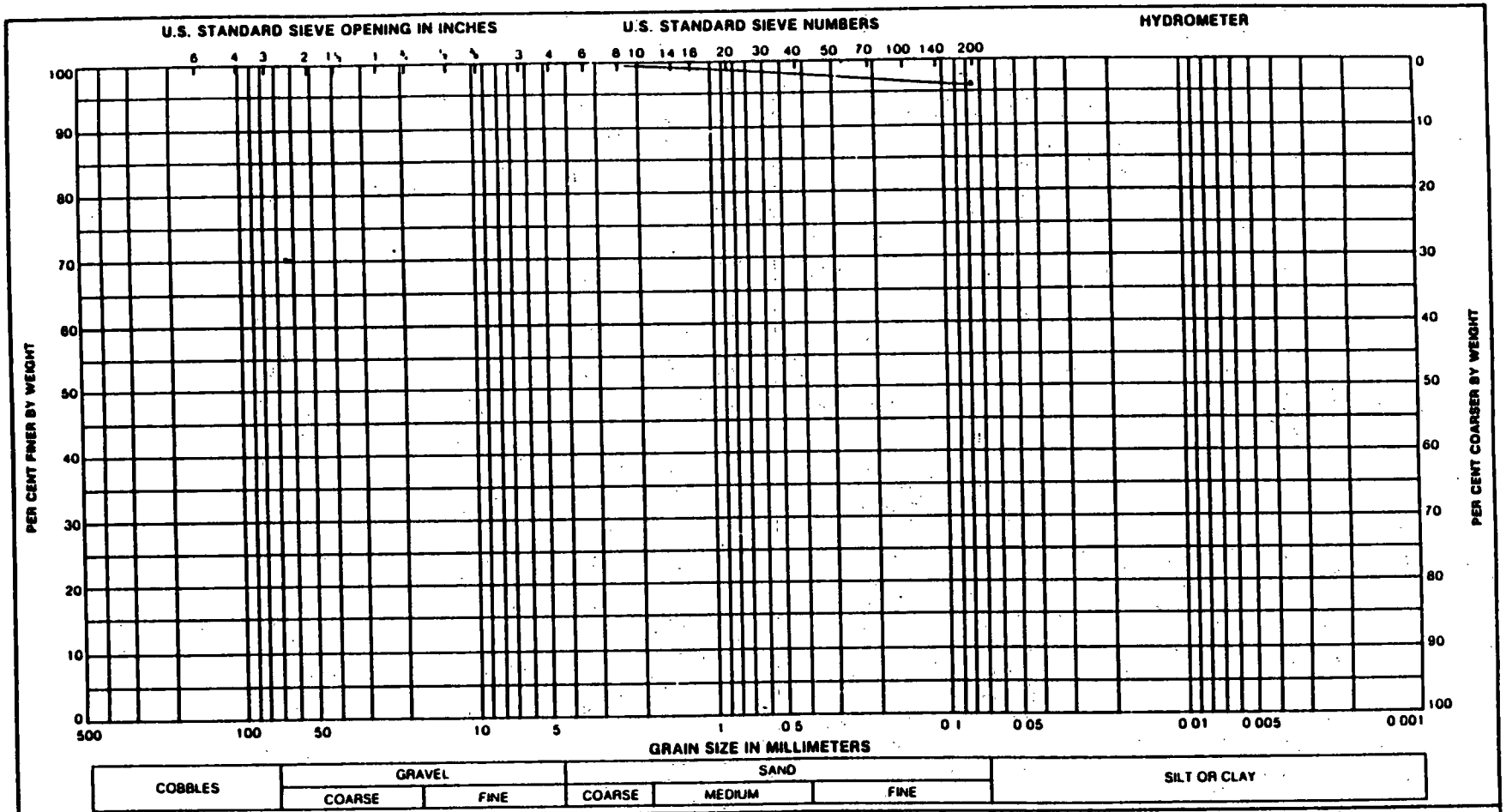
Project FMC Retention Pond Baltimore, Maryland	**Report Date** 6-23-88	**Report No.** 090	**PTL Order No.** 427-80004
	Client Order No. 058940	**Page** 1 of 1	**Lab No.** 88096
Client FMC Agricultural Chemical Group 1701 E. Patapsco Avenue Box 1616 Baltimore, Maryland 21203	**Source of Sample** Campbell sand & gravel		
	Soil Description Grey CLAY with trace fine sand		
	Sample Submitted By PSI	**Date Sample Received** 5-2-88	
	Test Method ASTM D-1557, Method A		
	Preparation Procedure ☐ Moist ☐ Dry	**Type of Rammer** ☐ Manual ☑ Mechanical	
	Max Lab Dry Density (lbs/cu ft) 105.3	**Optimum Moisture (%)** 16.0	



Distribution/Remarks
Client (1)

Submitted By:

Manager



Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI	Project
			Dark grey CLAY		48.0	25.8	22.2	FMC Retention Pond

REPORT OF SOIL ANALYSIS

File No 427-80004-090

APPENDIX D
4 of 9
(Typical)

UNIFIED SOIL CLASSIFICATION SYSTEM

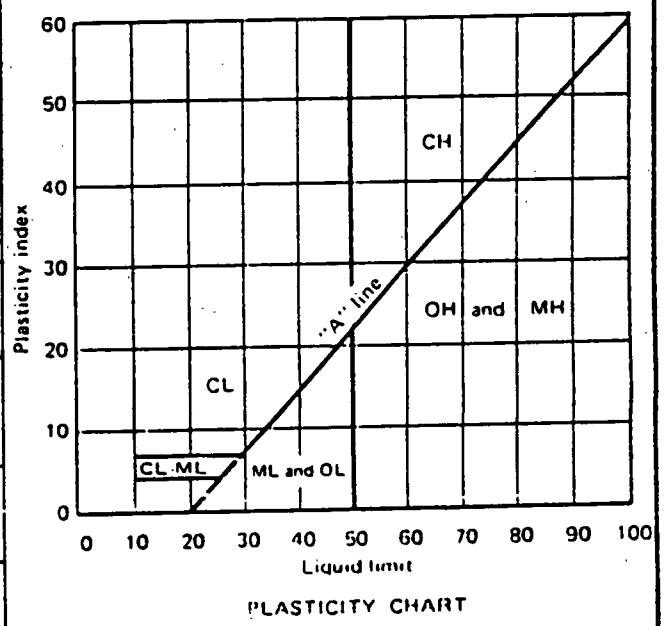
U.S. ARMY CORPS OF ENGINEERS – U.S. WATER AND POWER RESOURCES AGENCY – ASTM D2487

Major divisions			Group symbols	Typical names	Laboratory classification criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravel with fines (Appreciable amount of fines)	GM d / u	Silty gravels, gravel-sand-silt mixtures	Atterburg limits below "A" line or P.I. less than 4
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterburg limits above "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM d / u	Silty sands, sand-silt mixtures	Atterburg limits below "A" line or P.I. less than 4
			SC	Clayey sands, sand-clay mixtures	Atterburg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and Clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 per cent ..... GW, GP, SW, SP
More than 12 per cent ..... GM, GC, SM, SC
5 to 12 per cent ..... *Borderline* cases requiring dual symbols**

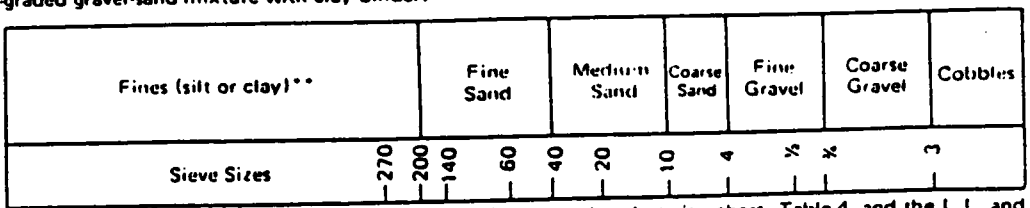
Above "A" line with P.I. between 4 and 7 *borderline* cases requiring use of dual symbols

Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols.



PLASTICITY CHART

*Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterburg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.
**Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.



**The L.L. and P.I. of "Silt" plot below the "A" line on the plasticity chart, Table 4, and the L.L. and P.I. for "Clay" plot above the "A" line.

ORIGINAL (Red)

Professional Service Industries, Inc.
Pittsburgh Testing Laboratory Division

850 Poplar Street
Pittsburgh, Pennsylvania 15220
412/922-4000

REPORT
No. 1

ORDER NO. 427-80004
DATE June 2, 1988

Client:	FMC Corporation
Report of:	Results of Permeability Test
Report to:	PSI - Baltimore
Project:	N/A
Sample Identification:	No. 1
Sample Represents:	Shale
Samples Submitted by:	PSI - Baltimore

PERMEABILITY TEST RESULTS

Sample No.	Remolded Data: Dry Density (pcf)	Remolded Data: Moisture Content (%)	Compaction (%)	Coefficient of Permeability (cm/sec)
1	100.4	17.2	95.3	3.003×10^{-8}

Note: Test made on material crushed thru a No. 4 sieve and remolded to 95% of the maximum dry density furnished by PSI - Baltimore.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.
PITTSBURGH TESTING LABORATORY DIVISION
Geotechnical Services

ms

APPENDIX D
7 9 (Original Filed)

O'BRIEN & GERE

9.3.5

May 6, 1988

M.A. Bongiovanni, Inc.
1400 Jamesville Ave.
P.O. Boy 147 - Colvin Station
Syracuse, N.Y. 13205

Dear Mike:

Your letter dated May 3 submitted test results for cover material to be used around the Stormwater Retention Tank. The submission was in accordance with Contract C Section 2004 Part 2 2.01. The attached test report was reviewed relative to the specifications and the reported permeability was 8.395×10^{-8} cm/sec, slightly above the specification of 1×10^{-8} cm/sec. The clay tested will meet the objective of the cover system. Consequently, the tested clay for the clay cover specified in the Contract Documents is approved.

If you have any questions, please contact me at (315) 451-4700.

Very truly yours,

O'BRIEN AND GERE ENGINEERS, INC.

Frank O. Hale

Frank Hale
Research Manager

cc: S.W. Anagnost
C.F. Kusiak
D.M. Gresko
[redacted]
S. Wescott

Professional Service Industries, Inc.

TEST BORING OR TEST PIT NUMBER	SAMPLE NUMBER	DEPTH OF SAMPLE TIP	ELEV. OF SAMPLE TIP	UNCONFINED COMPRESSIVE STRENGTH (TSF)	PENETROMETER (TSF)	NATURAL WATER CONTENT (Percent of Dry Weight)	DRY DENSITY (Pounds Per Cubic Foot)	VOLUMETRIC ANALYSIS			PARTICLE SIZE DISTRIBUTION							ATTERBERG LIMITS			APPARENT SPECIFIC GRAVITY
								SOLIDS (Percent)	Optimum Moisture	AIR (Percent)	COLLOIDS (Percent)	Percent Retained #200	SILT (Percent)	FINE SAND (Percent)	MEDIUM SAND (Percent)	COARSE SAND (Percent)	GRAVEL (Percent)	LIQUID LIMIT (Percent)	PLASTIC LIMIT (Percent)	PLASTICITY INDEX (Percent)	
*	88061						114.5		15%			10.0						54	31	23	

Permeability: 8.395×10^{-8} cm/sec

Percent Passing #200: 90.0%

*Sample For Retention Pond, Orangish Red CLAY - From Jos. J. Hock Inc.

PROJECT NAME		PROJECT NO.
FMC Retention Pond	TABULATION OF TEST DATA	427-80004 Lab.No. 88061
		DATE: 5-2-88 (completed 3-31)

APPENDIX C

PSI A-1000-17

ORIGINAL (Red)

M. A. BONGIOVANNI, Inc.

GENERAL CONTRACTOR

1400 JAMESVILLE AVE.
P.O. BOX 147 · COLVIN STA.
SYRACUSE, N.Y. 13205
315-475-9937

FAX 315-475-3620

May 3, 1988

O'Brien & Gere Engineers
Attn: Don Gresko
1304 Buckley Road
Syracuse, NY 13221

Dear Don:

Attached find two (2) copies of test results on our proposed clay cover material. The tests indicate compliance with specification on all items with the exception of the permeability factor.

Specs call for a maximum of 1×10^{-8} CM/SEC while our material is extremely close at 8.395×10^{-8} CM/SEC. We would think that this material still falls within the "clay" classification.

Anticipating a potential problem, we are arranging for tests to be run on a sample from another source (Campbells Sand & Gravel). However, these tests take approximately 3 - 4 weeks for results.

In light of this, we ask that the material from Jos. J. Hock's pit be accepted so that we can be assured of a source as the work is scheduled to begin June 9th, 1988.

If Campbells product has better factors, we will use that material if you desire. We just don't want to be caught short.

We would appreciate your consideration on this matter. Please let us know as soon as possible so we can plan accordingly.

Very truly yours,

M. A. BONGIOVANNI, INC.

Michael Bongiovanni

MB:dbl
Enclosures

APPENDIX E

COMPACTED SOIL BACKFILL TEST RESULTS

Professional Service Industries, Inc.
PTL Division

FIELD DENSITY TESTS

Project Name: FMC
Client's Name: BOD GIOVANNI
General Contractor: BOD GIOVANNI
Excavator: BOD GIOVANNI

PSI Job No.: 427- 90004
Client Job No.:
Date: 6-22-88
Weather: SUNNY Temp. (°F): 100°

2/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
1	14.7	107.6	1	90	95.3	✓			0	20'W 5'N FROM THE NORTH CORNER
2	13.6	110.1			97.7	✓				20'N 5'W
3	20.3	103.6			90.1	✓				30'N 50'W
4	14.3	112.2			99.4	✓				80'W 10'N
5	13.5	108.3			94.1	✓				10'S 95'W
6	15.0	103.7			90.3	✓				40'S 80'W
7	12.6	105.0			91.3	✓				60'S 110'W
8	15.6	104.1			92.0	✓				85'S 90'W
9	15.6	108.3			94.1	✓				10'E
10	11.4	114.2	↓	↓	99.2	✓			↓	30'S 40'E

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☑ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☑ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
1	115	14.5	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks: PROCTOR CURVE AS 40% BY CLIENT

Technician: Bruce Cain Date: 6-22-88 Approved: Field Copy Given To Client Yes ☐ No ☐

APPENDIX E
1 of 3
Rev. 1/84

PTL Division

FIELD DENSITY TESTS

Project Name: FMC
Client's Name: [illegible]
General Contractor: [illegible]
Excavator: [illegible]

PSI Job No.: 427- 80004
Client Job No.:
Date: 6-22-88
Weather: SUNNY Temp. (°F): 100°

3/4

TEST NO.	MOISTURE (%)	DRY DENSITY (PCF)	PROCTOR NO. *	% OF PROCTOR SPEC.	% OF PROCTOR ACTUAL	PASS	FAIL	**	ELEVATION BELOW FINISH GRADE (FT.)	LOCATION GRID COORDINATES OR ROADWAY STATION
11	14.5	106.4	1	90	[illegible]	✓			0	60's 10'E From the North corner of the tank
12	12.6	113.7		[illegible]	98.7	✓			0	80's 35'E " " "

Compaction Equipment Used: Vibratory ☑ Non-Vibratory ☐

Smooth Steel Drum ☐ Sheepsfoot ☑ Brickfoot ☐ Rubber-tired ☐
Vibratory Plate ☐ Jumping Jack ☐ Walk Behind Steel Drum ☐ Other:

(1) Test Location Established By: Grid Lines ☐ Control Points ☐ Estimation ☐ Contractor ☐
(2) Depth Or Elev. Of Test Established By: Survey ☐ Grade Stakes ☐ Estimation ☑ Contractor ☐
(3) Test Conducted On: Full Time Basis ☐ Intermittent Basis ☐

* Proctor No.	Maximum Density (PCF)	Opt. Moisture (%)	Std. Proctor	Mod. Proctor
	113	14.5	☐	☑
			☐	☐
			☐	☐

** Codes: (AR) - Area Re-Rolled
(ART) - Area Re-Rolled & Re-Tested
(R-X) - Retest Of Test No. X

Remarks:

Technician: Bruce Cain Date: 6-22-88 Approved: Field Copy Given To Client Yes ☐ No ☐

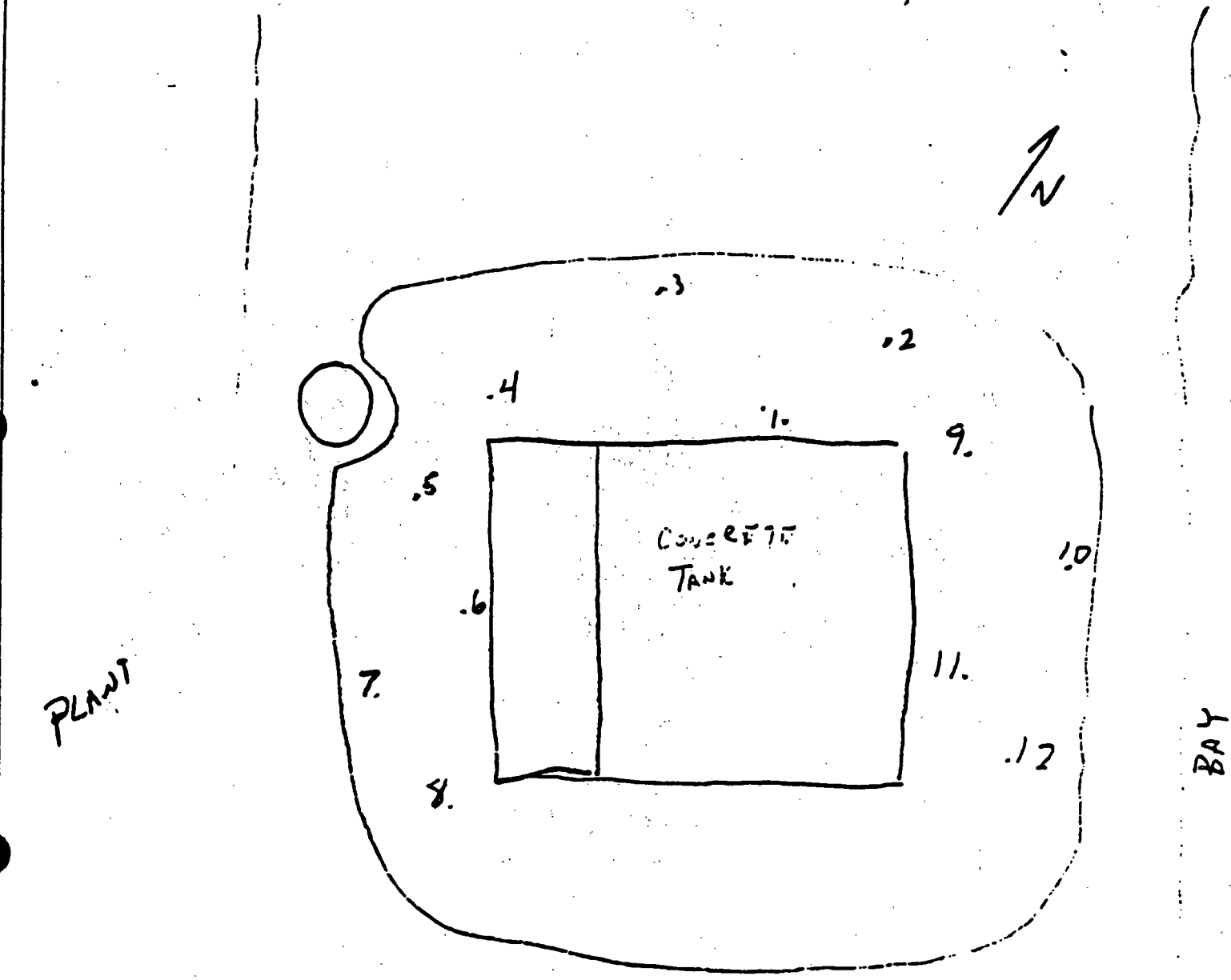
APPENDIX E
Page 3 of 3

Professional Services Industries, Inc.
PTL Division
806 Barkwood Court, S...
Linthicum, Maryland 21090
301/789-3224

ORIGINAL (Red)

FMC

SKETCH



Sketch No. 1	PTL Order No.	Lab No.	Page 4 of 4

ORIGINAL
(Red)

APPENDIX O

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

January 3, 1985

FMC

Mr. Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

As discussed with you on December 24, 1984, the following information outlines the HCl spill incident that occurred at our plant December 22nd.

On 12/22/84 at 0300 hours the drain valves on a new HCl on-spec line that was rerouted two weeks ago were found to be open. At this time the line was in use for six hours and about 490 gallons of HCl spilled on the roadway and into the construction site northeast of Building 90. Investigation showed that HCl was started at 2100 hours on 12/21/84. Upon discovery, the spill area was thoroughly flushed with water with 50 percent of the flushing going directly to our sewer system to our wastewater treatment system. The remainder of the flush was contained in a plywood form in the construction site, and soda ash was spread over the area of the spill. After this, the area was pumped to our wastewater treatment system. This procedure was repeated several times until the water in the area had a pH level above 5.0.

Several actions have been implemented to prevent a recurrence of such an incident. Effective immediately, the line will be checked twice per shift when in use and reinforcement of SOP was made to operators to conduct outside checks of their entire work area within one hour of shift change. In addition, the HCl storage tank level indicators will be checked for calibration and a flow indicator with read out in the MAC plant control room will be installed in the HCl line at the storage tank area just before the line tee's off to tanks.

In addition to these corrective measures, our environmental department has reinforced to appropriate personnel/supervisors the need to call in a release of any controlled hazardous substance within one hour to the OEP enforcement division.

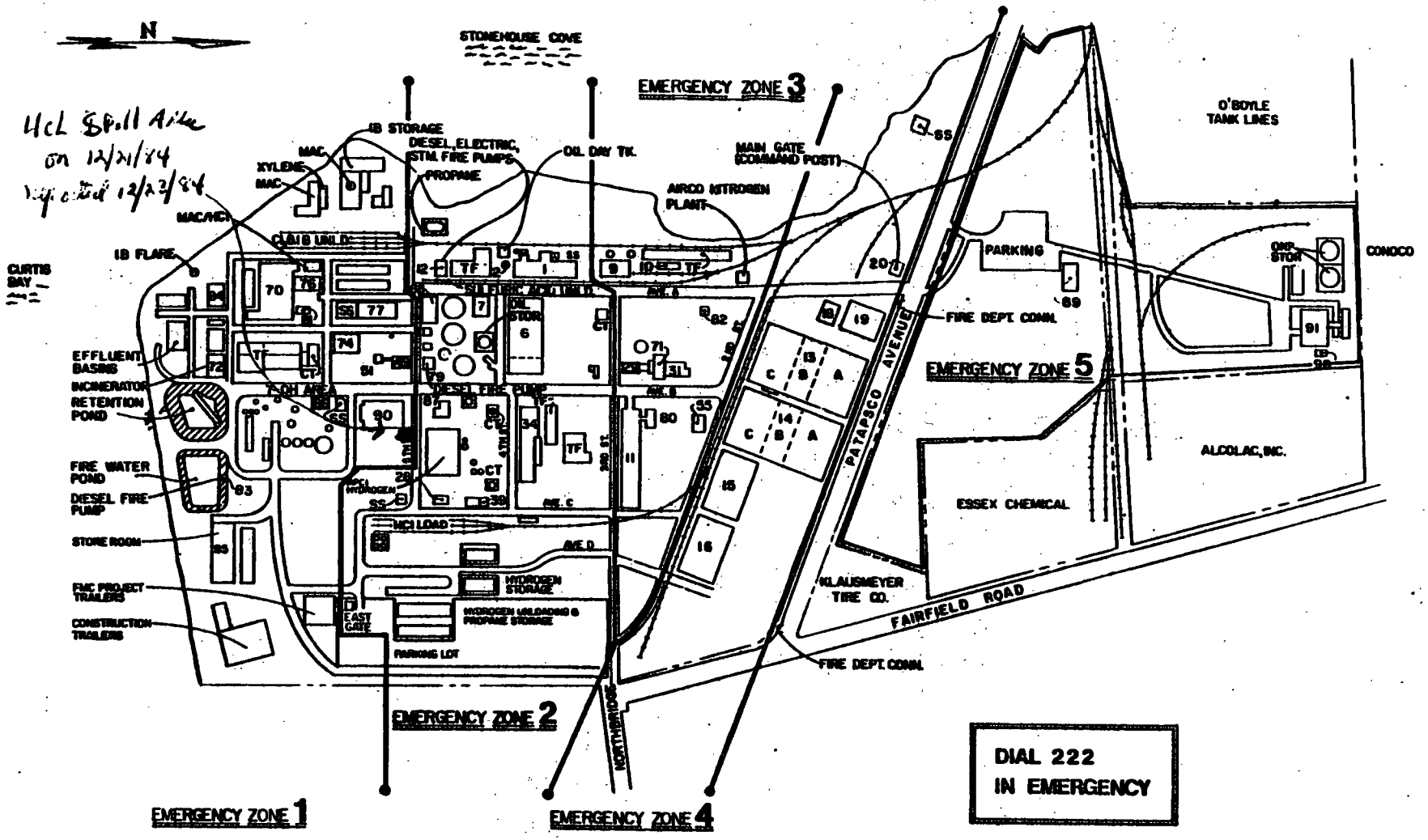
Should you have any questions or comments concerning this incident, please do not hesitate to call me.

Sincerely,

D. W. Palmer

D. W. Palmer
Environmental Manager

DWP:ct



NPG. LP.-TT. UNLOADING ROUTE

		2	ADD LP TO ZONE 2	GAB	drawn by: R.W. BROWN	REVISIONS	
					approved by:	4564-b	rev. no. 2
					JULY 30, 1982		

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

24

June 20, 1985

FMC

Mr. Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

As discussed with you on both June 19 and 20, 1985, the following information outlines the breakage of the HCl scrubber sewer line.

On June 19, 1985 at approximately 4:00 PM, it was noted that during the course of construction in the Plant 4 area, an underground terra-cotta pipe was accidentally broken. This pipe contains HCl contaminated water from the HCl scrubber bleed line. Since the pH is approximately 1.5, at a flow rate of approximately 2 GPM, the liquid is piped directly to the plant sewer system for treatment prior to discharge to the city sewer system.

Within a short time after notification was received, the area was flushed with fresh water for approximately 12 hours at a rate of 8 GPM. Due to this corrective action, the resulting pH was ~5. All free liquid was pumped to a plant sewer for further treatment.

Temporarily, a chemical hose will be routed to a plant sewer until permanent repairs are completed.

If you have any questions concerning this incident, please do not hesitate to call.

Sincerely yours,

C A Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

July 12, 1985

Mr. Paul Thompson
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Permit No. 80-DP-0499C

Dear Mr. Thompson:

As discussed in our phone conversation at 6:25 PM on July 10, 1985, the report on the 7/10 caustic spill incident is herein submitted. On July 10, 1985 at 6:00 PM while charging caustic to the DV acid chloride (FMC 30063) scrubber jet, a leak developed and resulted in a spill of approximately 25 gallons of caustic outside the process containment area. The wetted area was covered with sta-dri and subsequently shoveled into containers for later disposal. A sample of the outfall 002 effluent stream during the cleanup activity analyzed at a pH of 7.6. A grab sample at 9:00 AM on 7/11/85 yielded a 7.3 pH.

An investigation of the scrubber jet showed that a crack in the Haveg jet housing was the source of the leak. The scrubber jet system will not be used until a replacement or repaired jet is available and installed. Should you have any questions or comments concerning this incident, please do not hesitate to call me.

Sincerely,

D. W. Palmer

D. W. Palmer
Environmental Manager

DWP:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

August 13, 1985

FMC

Mr. Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

As you requested, I am submitting the plan for reconstructing the Building 12 sump.

To date, this sump has been emptied and a 2 ft. depth of #6 stone was placed on the bottom. The walls have been water blasted and are to be sandblasted in preparation for an epoxy concrete lining. Prior to lining, the opening in the west wall will be plugged and sealed with concrete and then an additional 4 ft. depth of stone and a 1 ft. concrete pad will be installed to decrease the sump volume and improve maintainability. An east-west weir wall will be installed in this sump to allow one compartment to serve as a carbon-grit trap for the backflush water from our carbon system. Two self priming pumps operated via a low-high automatic level control system will be installed in the north section of the sump. The surface drain west of the railroad tracks will be renovated and remain connected to this sump. The area around this surface drain and the sump will be graded to allow runoff into the sump with no accumulation of rain water. The sump water will be pumped into the sewer system that goes to our settling basins and carbon treatment system. It is estimated that the sump repair itself will be completed by 11/1/85 and the pumps and transfer piping installation completed by 2/1/86. In the interim, the Building 12 sump will be kept emptied via a portable pump and/or steam syphon. I trust that this plan meets your approval and will keep you informed of any major changes or developments.

Also, no seepage into Stonehouse Cove from west of Building 12 has been observed since a former abandoned drain pipe in the vicinity of the surface drain was removed. A sample of the discolored gravel in this area was analyzed and determined to be 2-4 dinitro-6-sec-butylphenol. This material was removed, drummed and prepared for shipment to a secure chemical landfill.

Please call me if any comments or questions arise.

Sincerely,

R. T. Sebrosky
Environmental Engineer

RTS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

December 26, 1985

FMC

Joseph Stang
State of Maryland
Department of Health and Mental Hygiene
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

In accordance with the Baltimore facility's CHS Permit, I am following up my 11:30 A.M. telephone call to William Schmidt and Reid Rosnick (O.E.P. representatives) with this memo officially notifying your office of a release that occurred at this plant on December 23, 1985. At approximately 11:15 A.M., I was informed that on the north side of Patapsco Avenue (Pounce facility), some DV Ester (product) splashed onto the ground. After thoroughly investigating this incident, I determined the cause and volume of material involved.

A tank truck located in a concreted and diked containment area was being filled with product (DV Ester) - normal operating procedures were being observed. After filling was completed, the loading pump was shut off. Shortly there after, liquid began to leak from a teflon seal, located in the loading line. The liquid (DV Ester) drained onto the previously loaded tank truck - causing the material to splash and subsequently fall to the ground.

The total volume of material that was contained in the loading pipe was ~seven gallons (7). I estimate, that ~1-2 gallon of DV Ester splashed onto the ground, while all remaining material was contained in a diked area. Absorbent was immediately placed on all free liquid, and shoveled into drums. All drummed material will be sent to a secure chemical landfill for disposal.

The loading line was then checked out to determine the cause of the teflon gasket failure. It was noted that apparently during mechanical assembly of this system, a metal backing plate (required to provide

rigidity to teflon gaskets) was omitted - thus responsible for the gasket failure. This system will be repaired and checked before use is permitted.

If you have any additional questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

cc: DWPalmer
RNMesiah - Phila.
FSiwajek
DCLewis

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

January 15, 1986

Joseph Stang
State of Maryland
Department of Health and Mental Hygiene
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On January 14, 1986, at approximately 12:45 PM, a small quantity of DV Ester (Product) was released outside of a containment area.

While attempting to straighten a pallet of 55 gallon steel drums containing DV Ester (Product), a forklift driver accidentally punctured one of the drums with one of the forks. Most of the liquid drained onto the macadam, and ~1-3 gallons drained onto a graveled area. The spill was responded to immediately. Oil-dry was immediately placed on all liquid, shoveled up and placed into drums. These drums of material were placed on a designated CHS storage area in preparation for shipment to a secure chemical landfill.

I telephoned the above information to Mr. Reid Rosnick, O.E.P., at approximately 1:00 PM in order to comply with the time constraint imposed by our CHS permit.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

FMC

January 15, 1986

Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: FMC Corporation
NPDES Permit No. 80-DP-0499C (MD0000299C)

Dear Mr. Stang:

As discussed with you via telephone on January 8th, I am submitting a summary of the events concerning the high DV acid (FMC No. 30062) value obtained for our outfall 002 stream on January 3rd.

The composite outfall 002 sample for 1/3 analyzed 1.69 PPM DV acid. A grab resample taken 1/7 gave 1.04 PPM DV acid. Since some subsequent upstream samples (Bldg. 91 SE & Bldg. 91 SW corners) gave > 0.83 PPM DV acid we decided to hydroclean the B-91 sewer system including the piping to the outfall 002 sample station. All cleaning water from this operation was vacuumed into a tank truck for retreatment in the resin system. After the hydrocleaning operation, an outfall 002 grab and several upstream samples were taken and analyzed < 0.08 PPM DV acid. A composite outfall 002 sample taken 1/10 gave 0.080 PPM DV acid. Considering that no DV acid had been produced since mid-August and that the Bldg. 91 sewer system extending to the outfall 002 sample station was hydrocleaned in November, the source of the DV acid is puzzling. A possible explanation could be a pocket of contaminated dirt in the building trench system that was missed in the first hydrocleaning operation. To minimize chances of future outfall 002 DV acid excursions, we will implement a sampling program of an upstream source(s). Please contact me if there are any questions or comments concerning the above matter.

Sincerely,

R. T. Sebrosky
Environmental Engineer

RTS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

FEB 20 1986

ENFORCEMENT DIV.

ORIGINAL (Red)

FMC

February 18, 1986

Joseph Stang
State of Maryland
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On February 13, 1986, you were informed by both Mr. Charles Lewis (O.E.P. 12:50 P.M.) and later by R. Sebrosky (FMC-2:08 P.M.), about two related releases that occurred at the FMC Baltimore plant on February 13, 1986.

At approximately 12:30 P.M. a tank of product (Sodium Sulfide) was overfilled due to an apparent failure of the tank's level indicator. At the time of overflow, the device indicated a level of 55%. Material flowed into a dike area and splashed onto a graveled area. I estimate that ~30 gallons of material was not contained. Oil-dry was immediately thrown on all free liquid.

At ~12:45 P.M., the tank's fill line was steamed to remove all product, however, a gasket failure occurred at a flanged section of piping, resulting in a release of ~20 gallons of product. All product fell to a graveled surface.

The line was immediately isolated in order to begin clean up procedures. Oil-dry was placed on all free liquid to contain the material. The contaminated gravel from both of the above incidents was removed and will be disposed at a secure chemical landfill.

A follow-up investigation noted that the liquid in the upper half of the product tank was frozen (tank is not heated or insulated) causing the level indicator to malfunction. A modification to this level indicator system will be devised to insure this mishap does not reoccur.

If you have any questions, please contact me.

Sincerely,

C.A Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

STANG ORIGINAL (Red)

RECEIVED FMC
MAY 27 1986
ENFORCEMENT DIVISION

May 22, 1986

Joseph Stang
State of Maryland
Office of Environmental Programs
Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On May 22, 1986 at ~11:30 A.M. Chemical Waste Management, Inc. (C.W.M.) personnel were loading copper sludge (a non-RCRA waste) from a waste tank. During this period, a gasket in C.W.M.'s trailer dome failed, resulting in a release of approximately 20 gallons of waste material. The material was released to a graveled area outside a concreted containment area.

Clean up and containment of the material began immediately. All contaminated dirt and gravel were removed and scheduled for shipment to a secure landfill.

The above information was telephoned to Ms. Debbie Ford, O.E.P. at ~12:30 P.M.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

FMC

June 2, 1986

Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On Monday, June 2, 1986 at approximately 6:30 AM, a railcar of 93% sulfuric acid was being unloaded. During this transfer operation, a stainless steel flex hose began to leak - resulting in a release of approximately 30-40 gallons of acid to the graveled ground. The transfer operation was immediately ceased. Containment and neutralization of the spill was begun immediately. Soda Ash was placed on all liquid in order to neutralize the material, while water was used to clean off the rail car.

After I was informed about this release, I contacted your office at approximately 9:10 AM.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL (Red)

FMC

November 25, 1986

Joseph S. Stang
Office of Environmental Programs
Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Stang:

This letter shall serve as a follow-up to my telephone call to the Department on November 23, 1986 at 0240 hrs., and our telephone conversation on November 24, 1986 at 0830 hrs.

In the early morning of the twenty-third we were removing heavy oils from our 2nd waste water treatment basin with a portable pump and chemical hoses to an incinerator feed tank for subsequent incineration. The overall purpose of the operation is to remove all material from the basin to permit inspection during our present outage and efforts in this regard had been underway for several days without difficulty. The operation was to continue during the night shift and upon starting the pump the operator proceeded to the control room (approximately 50' away). to check the incinerator feed tank level. In doing so the operator quickly noticed that the oils were being pumped to the concrete road, asphalt sidewalk and gravel area adjacent to the control room due to a separation in the hose connections. The operation was stopped immediately, absorbant applied and cleanup initiated.

A total of seven (7) drums of gravel-absorbant material were cleaned up and will be disposed at an approved facility. The estimated 100 gallons or less of heavy oils became very viscous in the cool night temperature and were confined to an approximate 12' by 15' gravel area bordered by roads, sidewalks and tank dike walls.

Should you have any questions or require any additional information, please do not hesitate to call me.

Sincerely yours,

A. P. Dean
Environmental Engineer

APD:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

FMC

March 9, 1987

Joseph Stang
State of Maryland
Office of Environmental Programs
201 West Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On March 6, 1987 at approximately 2015 hours, a valve located on a caustic scrubber line, developed a leak. The resulting leak allowed 10 gallons of a 25% caustic solution to spill onto the ground.

Afer discovering the leak, the leak was stopped and the contaminated dirt removed.

The above information was called into Mr. Paul Thompson on March 9, 1987 at approximately 2025 hours.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

FMC

March 19, 1987

Joseph S. Stang
Department of Health and Mental Hygiene
Office of Environmental Programs
Enforcement Division
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On Saturday, March 13, 1987, I informed you that an overflow from MH-4 occurred. Upon further investigation, it was determined that seepage had occurred along our south shore line.

The seepage occurred when a salt solution was being pumped from the first wastewater basin to the nearby sewer. The sewer line backed up and seepage was noticed along the south shore line. When the seep was noted, use of the sewer was immediately discontinued.

This sewer system will remain out of service until a determination is made and identification of the problem is determined. Options for repair or abandonment will be made and corresponded to you.

A sample of the liquid was taken and analyzed for our NPDES permit parameters. The results were:

Parameter	Concentration (PPM)
Total Organic Carbon	320
Total Suspended Solids	62.0
Total Chromium	0.13
Total Copper	0.14
Total Zinc	0.04
Phenolics	7.0
Oil and Grease	51.3
FMC 30077 (Prenol)	<0.01 (ND)
FMC 30098 (Step I Product)	<0.01 (ND)
FMC 30099 (Step II Product)	0.1
FMC 39338 (Methyl DV Ester)	2.07
Carbon Tetrachloride	<0.00001 (ND)
pH	9.9

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL (Red)

FMC

March 30, 1987

Joseph S. Stang
State of Maryland
Office of Environmental Programs
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUEST

Dear Mr. Stang:

On March 27, 1987, a process pipeline containing Sodium Sulfide solution (Bi-product) failed. Upon observing the leak, the line was immediately taken out of service. Approximately 10 gallons of material leaked to the adjacent graveled area. This gravel was removed and the area was flushed with water.

The above information was communicated to Ms. Ruth Schelhaus, Enforcement Division within 1 hour of the incident.

If you have any questions, please contact me.

Sincerely,

C.G Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

April 1, 1987

FMC

Joseph S. Stang
State of Maryland
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On April 1, 1987 a railcar containing a 47% solution of Potassium Carbonate (raw material) was being unloaded. During this operation approximately 50 gallons of material vented from the top dip-tube. The venting was secured when observed, and immediately stopped. This material leaked to the adjacent graveled area beneath the railcar.

The contaminated area was immediately flushed with water in order to neutralize the material.

If you have any questions, please contact me.

Sincerely,

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL (Red)

per 5/15/87

May 15, 1987

Joseph S. Stang
State of Maryland
Office of Environmental PRograms
201 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Stang:

This letter is a follow-up to our telephone conversation of May 10, 1987 at approximately 7:00 PM, at which time I reported to you a leak of hydrochloric acid (HCl) from an elbow in an FRP line in a pipe rack to the gravel surface below. This line transfers HCl from a production area to storage, and flow was stopped immediately upon discovery.

The area of gravel affected was approximately 15 square feet, and we estimate the loss to be less than 100 gallons. The gravel area was neutralized with soda ash and flushed to our in-plant sewer system. Repairs to this line were completed on May 12, 1987, and service restored.

Should you have any comments or questions regarding this matter, please do not hesitate to call me.

Sincerely yours,

A. P. Dean
Sr. Environmental Engineer

APD:ct

cc: DWPalmer
DCLewis

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

FMC

June 12, 1987

Joseph S. Stang
State of Maryland
Department of Health and Mental Hygiene
Office of Environmental Programs
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

On June 11, 1987 at approximately 11:00 AM, a pump was transferring sulfuric acid from a railcar to storage. The operator observed that acid was leaking from the seal. The transfer was immediately stopped. After the pump stopped, the seal failed, releasing ~5-10 gallons of material to the adjacent gravel. The leak was valved off, neutralizing material was placed on the acid and the affected area flushed with water.

The above information was provided to Ms. Diane Lewis of your office.

If you have any questions, please contact me.

Sincerely yours,

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL PROOF

FMC

January 22, 1988

J. S. Stang
State of Maryland
Department of the Environmental
201 West Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This is a follow-up to the conversation you had with Messrs. D. W. Palmer and R T. Sebrosky on 1/16/88 regarding the release of Hydroxylamine Sulfate (HAS) solution.

The following is a description of the events leading up to the release.

During the unloading of an HAS railcar into a storage tank, an operator observed that a remote tank level indicator did not rise as much as experience told him it should. This was reported to the operations crew and an immediate inspection of the tank farm area revealed a large leak from a pressure indicator gauge. The operator immediately closed a valve upstream of the gauge to stop the leak.

An inspection revealed that approximately 20,000 gallons of HAS solution leaked into the plant's wastewater system and onto the graveled area. It was later verified that approximately 6700 gallons actually leaked to the graveled area, and the remainder was contained in the plant waste water system. The contaminated gravel was removed and placed in a dumpster. This material will be disposed of at a secure chemical landfill.

An incident investigation determined that a small leak had begun on 1/15/88 when the diaphragm on the oil filled pressure gauge ruptured exposing mild steel internals to the corrosive HAS solution. The leak grew larger as corrosion of the non-stainless steel parts of the gauge occurred.

Corrective measures to prevent a recurrence of such an incident have been implemented and include; increased checking of remote tank farm areas, possible valving off of remote pressure indicator gauges when not in actual use, and close inspection of equipment and tanks before and after a bulk transfer.

If there are any questions or comments regarding this matter, please do not hesitate to contact me.

Sincerely,

C. A. Shaheen

C. A. Shaheen
Environmental Engineer

CAS:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue
Box 1616
Baltimore Maryland 21203
301 355 6400

ORIGINAL FILE COPY

FMC

Rec 3/1/88

February 26, 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, Maryland 21201

Dear Mr. Stang:

This letter is to follow-up my telephone conversation with Harold L. Dye of your office at 8:50 AM on February 22, 1988. Shortly before 8:00 AM on the twenty second, we experienced a release of material from a vessel in our 7-Hydroxy Plant IV process area. Over-pressurizing resulted in the escape of material, mainly methyl isobutyl ketone (MIBK), through the vessel's pressure relief device to the diked area surrounding the equipment. We estimate that aproximately 180-190 lbs. of the material reached the gravel, sidewalk and road immediately outside and east of the dike.

Cleanup was immediately initiated, and consisted of washing all exterior surfaces (dike walls, sidewalk, road), and picking up all affected gravel. The gravel has been placed in a dumpster for disposal in a secure landfill.

On February 23, 1988, an incident investigation was conducted at which time it was concluded that a faulty flow meter caused an excessive reactant addition rate to the vessel. The flow meter has been replaced, and with increase preventive maintenance and calibration we would not expect a recurrence.

Should you have any questions or require any further information do not hesitate to contact me.

Sincerely yours,

A. P. Dean
Environmental Engineer

APD:ct

cc: Harold L. Dye

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL RECD

FMC

March 8, 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This letter is to follow up my telephone conversation with Jeff Smith of your office at approximately 7:15 PM on March 2, 1988. Earlier that day, at 4:29 PM, an aerosol was vented from a reactor relief valve in the 7-Hydroxy Plant IV process area after the reactor over pressurized. The aerosol carried no more than 50 gal of methyl isobutyl ketone (MIBK) out of the reactor, which was deposited within the diked area and on nearby gravel. The State Waste Management Administration was contacted at 5:13 PM.

The process was shut down and cleanup began immediately after the spill. Paved areas, such as dike walls and floors and sidewalks were washed. Affected gravel was collected and placed in a dumpster for disposal at a secure landfill.

An investigation of the incident concluded that a malfunctioned level indicator caused the reactor to be filled excessively during raw material addition. The indicator has been repaired and will be checked more frequently to prevent another occurrence.

If you have any questions or require further information, do not hesitate to contact me.

Sincerely,

D. W. Palmer
Environmental Manager

DWP:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL

FMC

June 20, 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This letter is pursuant to my telephone conversation with Mr. Richard Johnson at 8:35 AM on June 17, 1988.

On June 17th at 7:50 AM, about 15 gallons of waste sodium sulfide solution sprayed from an overhead pipeline onto the gravel underneath. The leak occurred when a new gasket in a recently replaced section of the pipe failed. The leak was discovered immediately and the transfer pump was shut off.

The faulty gasket has been replaced and the other gaskets in the new pipe section have been inspected. The contaminated gravel was shoveled up and put into (12) 55-gallon drums. These will be sent to a hazardous waste landfill.

If you need any futher information, please feel free to call me.

Sincerely yours,

John J. Giblin

J. J. Giblin
Environmental Engineer

JJG:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL Recd

FMC

August 5, 1988

Joseph S. Stang
Department of the Environment
Waste Management Administration
201 W. Preston Street
Baltimore, MD 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:
This letter is pursuant to my telephone conversation with Art O'Connell on August 4, 1988 at 11:25 A.M.

On August 4 at 10:40 AM a relief valve on a vent line to the scrubber in the DV Ester/Cypermethrin building opened and discharged about 200 cubic feet of gas containing about 100 ppm hydrogen cyanide to the atmosphere. The relief valve reseated after 10 minutes.

The relief valve opened because the vent line was overpressurized, which was caused when a process filter was being blown out with nitrogen while the scrubber column was simultaneously operating in a flooded state.

The flowrate of caustic solution to the column was adjusted to correct the flooded condition.

If you need any futher information, please contact me.

Sincerely,

John J. Giblin

J. J. Giblin
Environmental Engineer

JJG:ct

RECEIVED
AUG 8 1988
HSWMA
ENFORCEMENT PROGRAM

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

February 28, 1989

Carrol James Leizear
Hazardous & Solid Waste
Management Administration
Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224

Dear Mr. Leizear:

As a follow-up to your visit of Friday, February 24, 1989, the damaged drum of soda ash found on the Building 34 - RCRA pad was overpacked that same afternoon.

Also, to aid in your familiarization of FMC Baltimore, I have enclosed a plot plan which is a little better in quality and more up-to-date than the one you may now have.

Sincerely,

A. P. Dean
Environmental Manager

cc: Mr. Joseph Stang

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

May 24, 1989

Mr. James Leizear
Maryland Department of the Environment
Hazardous and Solid Waste Management
Administration
2500 Broening Highway
Baltimore, Maryland 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Leizear:

This letter is pursuant to my phone conversation with you on May 24, 1989 at 10:45 AM to report an accidental release of methallyl chloride.

On May 24, 1989 at about 10:20 AM, a flange gasket in a pipeline containing methallyl chloride (MAC) in the Plant IV area failed, resulting in about 20 gallons of MAC spraying outside the containment area onto an adjacent sidewalk and gravel. The MAC line was immediately shut down. Maintenance has repaired the flange. Oil dry was applied to adsorb the spilled material and it and the contaminated gravel have been placed in drums and will be sent to a hazardous waste landfill. No injuries occurred from this incident.

If you have any questions, please feel free to call.

Sincerely,

Jack Giblin

John J. Giblin
Environmental Engineer

JJG:ct

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

June 5, 1989

Mr. James Leizear
Maryland Department of the Environment
Hazardous And Solid Waste
Management Administration
2500 Broening Highway
Baltimore, MD 21224

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Leizear:

This letter is pursuant to our phone conversaton on June 1st to report an accidental spill of sodium sulfide solution.

On June 1, 1989, at approximately 10:30 a.m., a railcar being loaded with sodium sulfide solution, began leaking around its bottom fittings. The operator working at the scene immediately ceased the loading process and obtained assistance. A containment basin was set up underneath the leak with plastic sheeting and sand bags. Some rags were stuffed in the leak, which slowed its rate to about 1/2 gpm. The spilled liquid collected in the temporary basin was pumped back into the railcar, while simultaneously the railcar was pumped back into a tank, T-9107, in Bldg. 6 where the sulfide solution was generated. The railcar was emptied about 9:00 pm that evening. No injuries were caused by the spill or its cleanup.

The operator at the scene when the leak occurred estimated that about 50 gallons of solution spilled before the leak was contained. The soil contaminated by the spill was left in place because removing it from underneath the tracks would be technically difficult and because most of the spill was likely collected by a french drain system underneath the rail siding and diverted it into the plant sewer system and wastewater treatment plant. Higher sulfide levels in the wastewater treatment system later that day confirmed this.

The solution which spilled contained 15-18% sodium sulfide at a pH of 13.3. It is a by-product of the Ethion process and is sold to a paper manufacturing company for its own use.

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

October 3, 1988

Mr. Joseph S. Stang
Department of the Environment
Hazardous and Solid Waste Management
Administration
201 W. Preston Street
Baltimore, Maryland 21201

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Dear Mr. Stang:

This letter shall serve as the requested follow-up to your inspection of Wednesday, September 28, 1988, addressing the items which you identified and the efforts we intend to take to prevent any recurrence.

The containers adjacent to our old incinerator were sealed, labeled and moved to our permitted south waste storage area by September 29th. Ultimate disposition and disposal of these drums is presently being determined.

The drums found in Building 6 were all likewise relocated to our permitted north waste storage area on September 29th. The drums identified "Ethion..." are non-RCRA hazardous and most were actually in-process materials, stored in the building for recovery and further processing during our present Ethion campaign. The sulfide waste drums contained materials removed from a process tank and had been held in the building to decant water from the drums every few days. Laboratory work was completed on September 29th characterizing these drums as non-RCRA hazardous. Nevertheless, we will dispose of this material at only licensed facilities, as is our normal policy.

The two-drums found in poor condition on our south waste storage pad were repacked on the evening of September 28th and the drums found at the perimeter of this area moved the same evening. We have attempted to control the access to these storage areas so as to better manage waste shipments and housekeeping at the area. Obviously, better definition is required to preclude storage of materials immediately outside the area.

ORIGINAL (Red)

Immediately following your inspection and again on September 30th, meetings were held with our unit and areas supervisors to review the circumstances which led to your findings, our regulatory obligations and procedures which we must employ to prevent any recurrences. I believe we have established a sound and credible regulatory history and have in place those standard operating procedures necessary to meet both the letter and intent of the law. Communicating and reaffirming these requirements and responding to those items you may request of us during inspections is critical in order to maintain this history.

During the first week of October we are developing the format of a training session which we intend to convey to all employees (and contractors) on the plant involved in our waste handling activities. Although this will duplicate our annual RCRA training it is clearly necessary. These sessions will cover waste identifications, labeling and dating, inspection procedures, storage requirements, procedures involved with the accumulation of wastes in production areas, obligations of contractors working for FMC contract administrators, etc. With the completion of the agenda all retraining will begin immediately and be documented and completed by early November.

We very much appreciate your return visit this week and our discussions which will improve this training and our understanding of this complex area. If you have any comments, questions or other recommendation on these issues please do not hesitate to contact me. Please be assured that your findings of last week will not be found again.

Sincerely,

A. Parker Dean
Environmental Manager

APD:ct

APPENDIX P

Revised: Nov. 1986

ORIGINAL (Red)

SECTION 3

Inventory of Known Hazardous Wastes

Generated by, or known to exist on the premises of, the Baltimore Plant

ORIGINAL (Red)

T-6405 TMOA WASTE

	5/14/84	5/15/84
Methyl Acetate	7.3 %	7.3 %
Methanol	58.3 %	60.3 %
Acetonitrile	6.0 %	6.1 %
TMOA	ND	ND
Trimethyl triazine	0.8 %	0.7 %
Chlorotoluene *	26.1 %	25.0 %
Chloroform *	40 ppm	45 ppm
Carbontetrachloride *	2243ppm	2317ppm
Benzene *	23 ppm	24 ppm
Toluene *	61 ppm	61 ppm
Chlorobenzene *	34 ppm	34 ppm
Methylenechloride *	ND	ND

WASTE METHANOL

	5/14/84
Isoprene / Heptane	55 %
Methyl Acetate	1.4 %
Methanol	42 %
Methylenechloride *	28 ppm
Chloroform *	115 ppm
Carbontetrachloride *	5109 ppm
Benzene *	270 ppm
Toluene *	822 ppm
Chlorobenzene *	853 ppm

ORIGINAL (Red)

2ND BASIN OIL P-2208

	5/14/84	5/16/84
7-H	0.5 %	1.0 %
ONP	35.7 %	32.1 %
Claisen	1.2 %	0.3 %
Isobutenyl	19.9 %	19.0 %
ONPME	1.5 %	6.7 %
7-Nitro	40.5 %	36.9 %
Tars	4.8 %	5.0 %
2-chlorophenol *	2690ppm	2303ppm

3RD BASIN OIL P-1205

	5/14/84	5/16/84
7-H	6.2 %	6.0 %
ONP	3.4 %	3.5 %
Claisen	4.7 %	4.5 %
Isobutenyl	4.6 %	4.5 %
ONPME	61.1 %	59.5 %
7-Nitro	11.7 %	12.1 %
Tars	4.3 %	5.0 %

ORIGINAL (Red)

CLAISEN TAR P-2235

	5/14/84	5/16/84
ONPME	4.3 %	52.1 %
Tars	5.8 %	29.4 %
2,4-Dinitrophenol*	ND	165 ppm
4-Nitrophenol *	ND	780 ppm

Indications from the analytical data are that the sample taken 5/14/84 is mostly oil diluent.

SUPER TAR P-2236

	5/14/84	5/16/84
ONPME	15.8 %	34.9 %
Tars	55.8 %	44.0 %
2,4-Dinitrophenol *	123 ppm	217 ppm
4-Nitrophenol *	840 ppm	992 ppm

Added to original

ORIGINAL (Red)

COOLING TWR SLUDGE

Components %	Sample Method Frequency	Test Method
30-60 Algae Residue	Grab/1/Yr.	
1 Chromate ION		1-M
500 ppm Zinc ION		1-M
Balance Water		

7-HYDROXY TAR

Components %	Sample Method Frequency	Test Method
100	Grab/1/6 months	F-V-9

7-OH TAR ANALYSIS

C. A. Shaheen

The residue of 7-Hydroxy distillation where the 7-hydroxy is manufactured from ONP consists of dimer, trimers, tetramers and higher numbers of repeating units of the following basic building blocks (monomeric units).

(1) 2,2 Dimethyl - 2,3 - dihydrobenzofuranol

(2) 2,2 Dimethyl - 2,3 - dihydrobenzofuran

(3) Xylene

(4) 2,2 - Dimethyl - 2,3 - dihydro - 7 - amino benzofuran

90% of all tars analyzed are dimers and trimers of the 1st two compounds.

G.C. volatile compounds have been identified to a molecular weight of ~450. Non- G.C. volatile compounds are assumed to be tetramers, pentamers and higher number repeating units of rapidly diminishing concentration.

Two other tars of the 75% identifiable by gas chromatograph do not fit the above description. They are:

3% 2,2 - Dimethyl - 2,3 - dihydro - 3 - Keto benzofuranol

2% 2,2 - Dimethyl - 2,3 - dihydro - 3 - hydroxy benzofuranol

ORIGINAL (Red)

7-OH TAR PLANT # 1

	5/15/84	5/16/84
7-OH	2.4 %	2.3 %
Tars	51.2 %	46.6 %

7-OH TAR PLANT # 3

	5/14/84	5/16/84
7-OH	2.2 %	5.2 %
Tars	85.1 %	84.6 %

Added

ORIGINAL (Red)

MAC WASTE

	5/14/84 T-1141	5/16/84 P-1142
IB	0.2 %	0.2 %
TBC	0.04%	.04%
ICC	1.5 %	1.7 %
MAC	6.3 %	5.2 %
DCIB (1)	45.4 %	49.2 %
DCIB (2)	32.4 %	33.2 %
TCIB (3)	14.1 %	13.4 %

DCIB (1) = 1,2-dichloro-2-methylpropane or dichloroisobutane

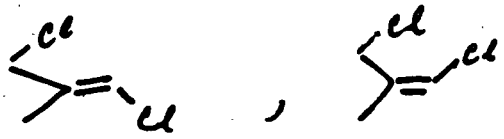
DCIB (2) = 3-chloro-2-chloromethyl-1-propene and
(cis/trans) 1-chloro-2-chloromethyl-1-propene

TCIB (3) = 1,2,3-trichloro-2-methylpropane

Allied

DCIB(2)

3-chloro-2-chloromethyl-1-propene



(cis/trans) 1-chloro-2-chloromethyl-1-propene

DCIB(1)

1,2-Dichloro-2 methyl-propane

ORIGINAL (Red)

WASTE METHANOL

Components %	Sample Method Frequency	Test Method
65-75 MeOH 2-4 TMOA 1-2 MeAc 4-6 Heptane ≤1 Isoprene ≤1 H_2O ≤1 FMC 30098 " 39338	Grab/1/6 month	DVE-1

PVC

ORIGINAL (Red)

STEP I BOTTOMS

Components %	Sample Method Frequency	Test Method
10-30 FMC 30098 30-60 FMC 30085 10-15 TMOA	Grab/1/6 months	DVE-1

Original

ORIGINAL (Red)

4/26/85 CAS

CHLOROACETYLENICS

Composition	90
DV Ester	30 - 33
Heptane	25 - 30
Chloroacetylenics	25 - 30
Methyl Benzoate	5 - 10

ORIGINAL (Red)

MDD003071875

CAS 12/28/83

C-1 Chemical and Physical Analysis (Update)

TMOA WASTE ORGANICS

Composition	%
Methanol	30-35
O-Chlorotoluene	30-35
Trimethyl-O-Acetate	12-14
Methyl Acetate	5-7
Sodium Chloride	1-2
Acetonitrile	1-2
Methyl Chloride	5-6
Acetamide	1-2
Sodium Methoxide	1.0

RCRA Classification - D001 - Ignitable Liquid

ORIGINAL (Red)

MDD003071875

CAS 12/28/83

C-1 Chemical and Physical Analysis (Update) (continued)

TMOA - Waste Filter Cake

Composition	%
Ammonium Chloride	75-80
Sodium Chloride	15-18
O-Chlorotoluene	6-8
Methanol	1.0
Trimethyl O-Acetate	1.0
Acetonitrile	10 ppm - 12 ppm

RCRA Classification - D001 - Ignitable Solid

A-1441

ORIGINAL (Red)

DVE

STEP III BOTTOMS

Components %	Sample Method Frequency	Test Method
10-20 FMC 39338 10-20 FMC 30094 10-20 Trichloroproducts of FMC 30094 5-10 Methyl 3 Benzene 2,2 dimethylcyclopropane carboxylate Balance - polymers of FMC 39338	Grab/1/6 months	DVE-3

Original

STEP III HEAD CUT

Components %	Sample Method Frequency	Test Method
40-50 FMC 39342 10-20 FMC 39338 10-15 Methyl Benzoate 25-40 FMC 39338 Analogs	Grab/1/6 months	DVE-3

STEP II

Components %	Sample Method Frequency	Text Method
80-85 CCl_4 10-12 MeOH, MeAc, Isoprene 0-5%Chloroform TR - Methyl prenyl ether TB - Chlorobenzene	Grab/1/6/months	DVE-2

ORIGINAL (Red)

DV ESTER BRINE

Components %	Sample Method Frequency	Test Method
10-15 NaCl	Grab/1/Month	#285
.1-.3 MeOH	" "	
.1-.2 Heptane	" "	DVE-3
.2-.5 polymers of FMC 39338	" "	
$\leq$100 ppm CCl_4		NW-2
Trace Na_2HPO_4		Standard Method 424
Balance - H_2O		

original

SPENT CARBON

Components %	Sample Method Frequency	Test Method
.1-.5 CCl_4	Grab /1/6/month	DVE-2adapted
.1-1 Heptane	" "	
1-2 MeOH	Grab/1/6 month	
TR-FMC 30098		
" 39338	" "	WW-3 adapted
" 30099	" "	
Balance Carbon	" "	

ORIGINAL (Red)

COPPER SLUDGE

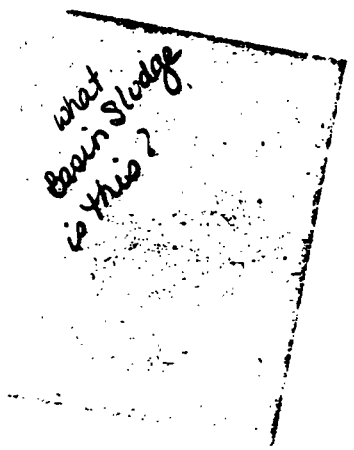
Components %	Sample Method Frequency	Test Method
10-20 Na_2SO_4 1-3 $Mg(OH)_2$, NaOH	Grab/1/6 month	FMC - P-100
1-10 CuO .1-.3 Xylene 3-6 polymerized benzofuranols Balance H_2O		ASTM (D 1067) 31 FMC-M-1

Original

ORIGINAL (Red)

BASIN SLUDGE

Components %	Sample Method Frequency	Test Method
60-70 Water 12-18 $7NO_2$ 10-15 Isobutenyl 1-5 Isobutyl 1-5 Inorganic Salts Balance Polymerized Tars	Grab/1/Yr.	P-100 adapted



Original

ORIGINAL (Red)

SODIUM BROMIDE

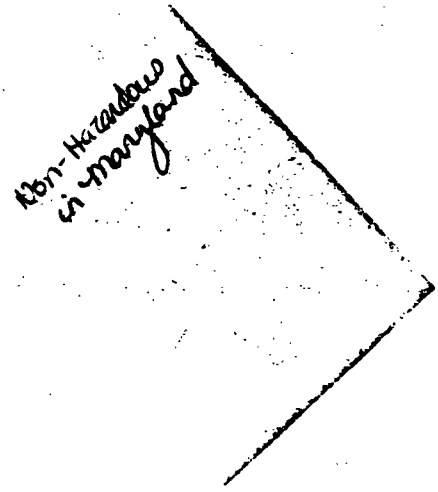
Components %	Sample Method Frequency	Test Method
5-15 NaEDTA 25-35 NaBr 50-70 H_2O 50-75 ppm Ethion	Grab/1/6 month	FMC - 30.1 FMC - 30.7 FMC - 30.7

Original

ORIGINAL (Red)

ASBESTOS INSULATION

Components %	Sample Method Frequency	Test Method
100 Asbestos	Grab/1/Yr.	ASTM (D-628) 33



Original

ORIGINAL (Red)

7 NO_2 BOTTOMS

Components %	Sample Method Frequency	Test Method
30-50 $MgCl_2$ 50-70 7 NO_2 .5-.8 ONP	Grab/1/6/months	Filtration F-II-B-8

CONTAMINATED LAB GLASSWARE

Components %	Sample Method Frequency	Test Method
90-95 Glass 5-10 Plastic Caps .5-1 Various DHS	Grab/As required	Source determined

ORIGINAL (Red)

7-NITRO SPILLAGE

Components %	Sample Method Frequency	Test Method
90-93 $7NO_2$	Grab/1/6 months	
1-4 Claisen	" "	F-IIB-8
1-4 Isobutenyl	" "	"
0-1 ONP	" "	"

ORIGINAL (Red)

BASIN LIQUID

Components %	Sample Method Frequency	Test Method
40-50 ONPME	Grab/1/Yr.	F-IIB-1
2-5 ONP	" "	"
10-40 Water	" "	"
10-20 7NO_2Tars	" "	"
10-20 Sand, Dirt, Carbon		Filtration

ONP SPILLAGE

Components %	Sample Method Frequency	Test Method
5-10 ONP 90-95 Dirt/Gravel	Grab/As Required	FRM-I-1 Filtration

ORIGINAL (Red)

P_2S_5 SWEEPINGS

Components %	Sample Method Frequency	Test Method
75-90 P_2S_5	Grab/1/Yr.	Monsanto #12,389 or Outside Lab Filtration
10-25 Dirt/Sand		

EMPTY POUNCE DRUMS

Components %	Sample Method Frequency	Test Method
< .1 Pounce 90-92 C.S. Drum 8-10 Liner	Grab/As Required	Pounce - 1

ALLYL ALCOHOL/ETHER

Components %	Sample Method Frequency	Test Method
80-95 Diallyl Ether 4-10 Allyl Alcohol remainder H_2O	1/transfer to incinerator	G.C.

MONOMERS RESIDUE

Component %	Sample Method Frequency	Test Method
95 Diallyl Phthalate (DAP) or 95 Diallyl Isophthalate (DAIP) or 95 Diallyl Maleate (DAM) remainder DAP, DAIP, or DAM polymers	1/transfer to incinerator	FMC - 23 G.C.

OIL B

Component %	Sample Method Frequency	Test Method
80-90 Dithioic esters remainder Dithioic salts	grab/as required	FMC - 30.5

POUNCE ORGANICS

Component %	Sample Method Frequency	Test Method
70-80 MeOH 10-20 n-Octane remainder H_2O + HCl	1/transfer to incinerator	FMC - Pounce - 7

CYPERMETHRIN STEP I WASTE

Components %	Sample Method/Frequency	Test Method
NaCl 10-15 MeOH 5-10 FMC 30062 800-1500 ppm FMC 39338 1300-2000 ppm Water - Balance	Grab-1/campaign	FMC - FRM - 40 G.C. A% FMC - CYP - 1 FMC - CYP - IV-B ASTM (D-2777) 31

ORIGINAL (Red)

CYPERMETHRIN STEP II WASTE

Components %	Sample Method/Frequency	Test Method
NaCl 3-6	Grab-1/campaign	FMC - FRM -40
Na_2SO_3 10-15		Outside Lab
Na_2SO_4 1-2		Outside Lab
NaOH 0-1		FMC - 285
Heptane 30-50		FMC - CYP - 1
DV Acid Chloride 1-5		FMC - CYP - III-B

ORIGINAL (Red)

CYPERMETHRIN STEP III WASTE

Components %	Sample Method/Frequency	Test Method
NaCN 1-3 NaCl 10-15 Na_2CO_3 5-10 FMC 51055 3-8 Cypermethrin 500-800 ppm	Grab-1/campaign	STD Method 412B FMC - FRM - 40 ASTM - (D513) 31 FMC - CYP - IIIB FMC - CYP - XI

ORIGINAL (Red)

CYPERMETHRIN WASTE - OIL DRY/SAMPLE JARS, MISC.

Components, %	Sample Method/Frequency	Test Method
Cypermethrin 100-800 ppm	Grab-1/campaign	FMC - - CYP - XI
NaCN 1-2		STD Method 412-B
FMC 39338 1-3		FMC - CYP - IVB
MeOH 1-3		GC A%
NaOH 0-1		FMC 285
Oil Dry - Balance		Filtration

CYPERMETHRIN SPENT CARBON

Component %	Sample Method/Frequency	Test Method
Activated Carbon 98-99 Heptane } Methanol } - Balance	Grab-1/campaign	Filtration GC A%

CYPERMETHRIN WASTE HEPTANE

Component %	Sample Method/Frequency	Test Method
Heptane 60-80	Grab-1/Campaign	FMC - CYP - 1
DV Acid Chloride 5-10		FMC - CYP - 1
Water Balance		Karl Fisher

ORIGINAL (Red)

TABLE 1

Facilities containing Hazardous Wastes

Item Number	Material	Volume (Gal.)	Location
T-203	90% Carbon Tet	3000	Bldg. 34 Area
T-353	Chloroacetylenics	1000	
T-411 (2), 412 (2), 413	Methanol	10,000 ea.	
T-440	Brine	100,000	
T-551	3% Carbon Tet	10,000	
T-556	3% Sodium Cyanide	5,000	
T-17	Isopropanol	5,000	Bldg. 91 Area
T-18	Organics	3,000	
T-23	Treated Waste Water	5,000	
T-23	" " "	5,000	
T-22	" " "	10,000	
Fire Water Pond	Pumice Contamination	38,000	
Waste Water Storage	" "	30,000	
T-21	Untreated Waste Water	10,000	
T-9273	Oil B	10,000	Building 6 Area
T-3466	Oil B	13,000	
T-3469, 3470 3471	Sodium Bromide	13,000 ea.	
T-17363, 17364	Sodium Sulfide	12,000 ea.	
T-17373	Sodium Sulfide	10,000	
T-20447	Sodium Sulfide	100,000	

ORIGINAL (Red)

Page 2

Facilities containing Hazardous Wastes

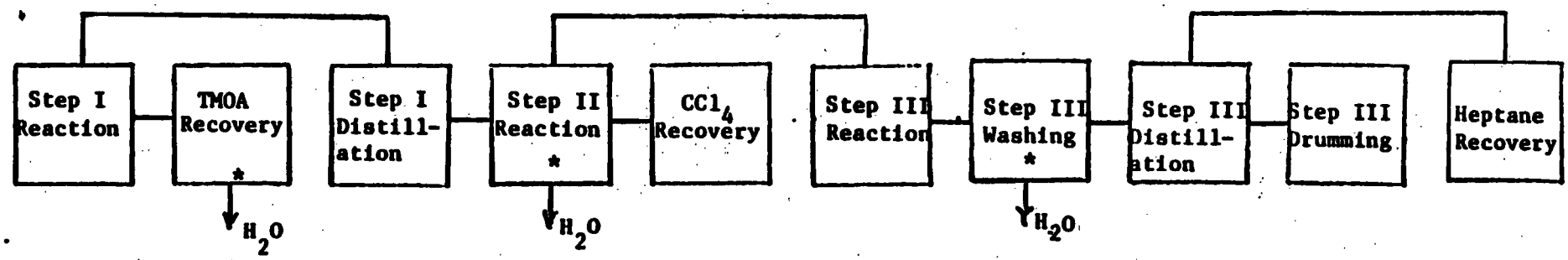
Item Number	Material	Volume	Location
V-2230, 2231, 2232	Coal Filters	8,000 ea.	W. of J. Zink Inc
Calgon Vessels (4)	Activated Carbon	9,000 ea.	Calgon Bldg. - N. 7-Oil Shop
T-600; 17183; 17184; 590; 593	Allyl Ether	10,000 ea.	Bldg. 9 Area
T-2209	7-Oil Oil (Decanter)	1,160	7-Oil Area
T-2203A, 2203B	Waste Organics	20,000 ea.	
T-2204A, 2204B	Waste Organics	4,300 ea.	
V-1211, 1212, 1518, 1519, 3211, 3212, 3518, 3519	7-Oil Tar (Tar Receivers)	190 ea.	
V-211, 212		60 ea.	
T-1221, 1221A, 1221B 1221C, 1221D, 1221E, 1221F	Tar Buggies	150 ea.	
T-1281-3	Settling Tank	5,160	
T-2201	Waste Tar	2,500	
T-1210, 3210	Emergency Quench Pit	11,500	
Effluent Basins (3)	7-Oil Tar, Ether, Xylene Sludge	101,600 Total	
Retention Basin (North and South)	7-Oil Oils, Grease, Sludge	1,000,000 Total	
T-2501, 2502, 4301	Waste Water	1,500,000 each	
T-506	N. Copper Settler	50,000	
T-1827	S. Copper Settler	60,000	
T-3570A, B. C	Copper Waste Water	102,430 each	

ORIGINAL (Red)

Facilities containing Hazardous Wastes

Item Number	Material	Volume	Location
T-3571	Copper Waste Water	540,000	
T-3567	Copper Sludge	10,150	
T-1723	Aqueous Waste	210	

2. BLOCK DIAGRAM



* = Potential Spill Area

1. Name - DV Ester

2. Pollution Potential - High

3. Spill Receiving System - Containment Area, Sump

4. Counter Measures - Recovery and/or Contract Disposal

5. Removal - Available

6. Reporting - Environmental Incident Report

7. Start-up/Shut-down Wastes - No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location

	Continuous	Intermittent	Infrequent
a. Pump Shafts			
b. Agitators			
c. Valve Stems			
d. Vent Systems			X
e. Sampling Prints		X	
f. Level Controllers			X
g.			
h.			

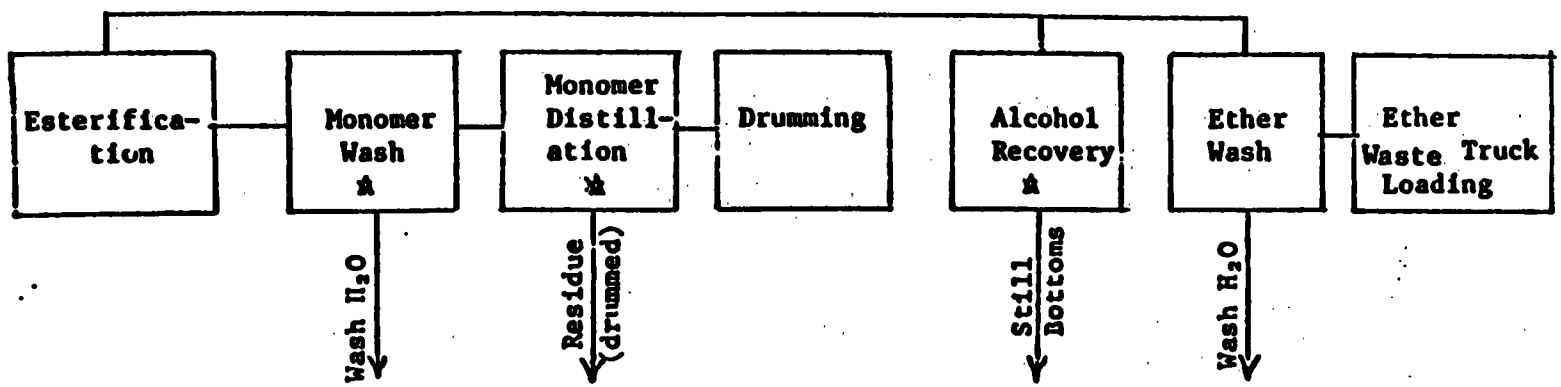
10. Inspection/Maintenance-Adequate

11. Previous Incidents -

12.

ORIGINAL (Red)

BLOCK DIAGRAM



* = Potential Spill Area

1. Name - Monomers

2. Pollution Potential - High

3. Spill Receiving System - WTS

4. Counter Measures - NP

5. Removal - A (If contained)

6. Reporting - Environmental Incident

7. Start-up/Shut-down Wastes No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts			x
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			x
f. Vacuum jet dschg.		x	
g.			
h.			

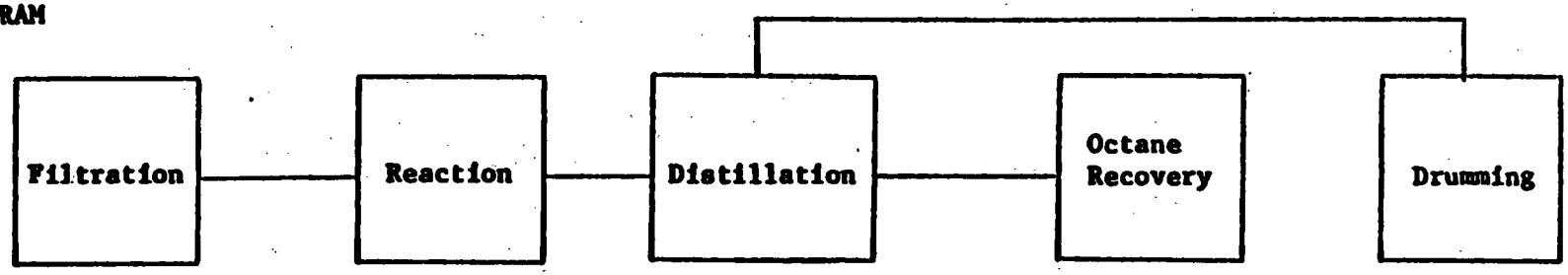
10. Inspection/Maintenance - Adequate

11. Previous incidents -

12.

ORIGINAL (Red)

BLOCK DIAGRAM



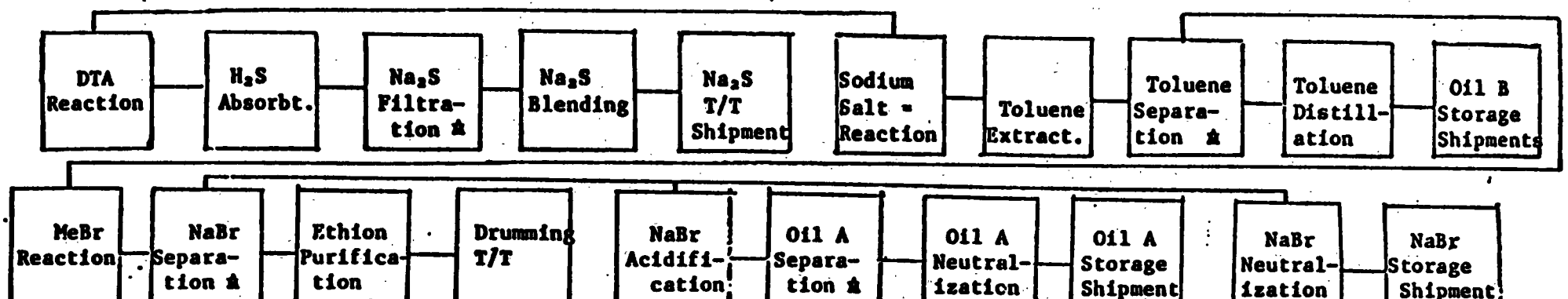
* = Potential Spill Area

1. Name - Pounce (FMC 33297)
2. Pollution Potential - High
3. Spill Receiving System - Containment Area
4. Counter Measures - Recovery and/or Special Disposal
5. Removal - A
6. Reporting - Environmental Incident
7. Start-up/Shut-down Wastes - No S-U/S-D Wastes
8. Frequency of upsets/failures - Unknown
9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts			
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			
f.			
g.			
h.			

10. Inspection/Maintenance - Adequate
11. Previous incidents -
12. Comments -

ORIGINAL (Red)



⚠ = Potential Spill Area

1. Name - Ethion, Sodium Bromide Recovery
   Sodium Sulfide Recovery

2. Pollution Potential - Ethion - High
   NaBr - Med.
   Na_2S - High

3. Spill Receiving System - WTS

4. Counter Measures - NP

5. Removal - A (If Contained)

6. Reporting - Environmental Incident

7. Start-up/Shut-down Wastes No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location:	Continuous	Intermittent	Infrequent
a. Pump Shafts			x
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			x
f. Piping			x
g.			
h.			

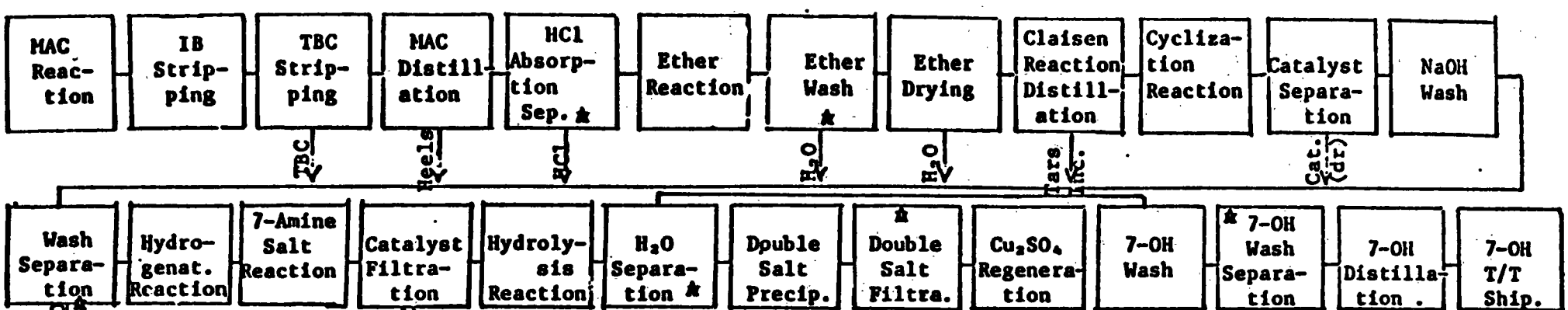
10. Inspection/Maintenance - Adequate

11. Previous incidents -
    Oct. 1971, Toluene Recovery System, Unknown, 1, Effect Unknown
    Quantity (500 gals)

12.

ORIGINAL (Red)

BLOCK DIAGRAM



★ = Potential Spill Area

1. Name - 7-Hydroxy

2. Pollution Potential - High

3. Spill Receiving System - WTS

4. Counter Measures - NP

5. Removal - A (If Contained)

6. Reporting - Environmental Incident

7. Start-up/Shut-down Wastes - No S-U/S-D Wastes

8. Frequency of upsets/failures - Unknown

9. Location:

	Continuous	Intermittent	Infrequent
a. Pump Shafts		x	
b. Agitators			
c. Valve Stems			
d. Vent Systems			
e. Sampling Pts.			x
f. Level Controllers			x
g.			
h.			

10. Inspection/Maintenance - Adequate

11. Previous incidents -

12.

ORIGINAL (Red)

Section 4.0 - Wastewater Treatment System

It is plant policy to operate all production units at conditions that result in the minimum discharge of pollutants in the wastewater streams. All wastewater streams from the various production units (south of Patapsco Avenue) flow to the plants' wastewater treatment facility prior to discharge into Curtis Bay. A description of this facility including appropriate maintenance and operational items are given in the following sections.

The Pounce manufacturing facility (north of Patapsco Avenue) is surrounded by curbing that directs any wastewater to a sump. The sump contents are pumped into holding tanks. No wastewater is discharged to an outfall that does not meet the NPDES permit requirements for this operation.

Section 4.1 - Description

The waste water treatment facility is divided into two parts, the plant general and the 7-OH treatment systems. The plant general system treats the following streams:

PLANT GENERAL SYSTEM

1. Wastewater from all production units other than 7-OH.
2. Clean wastewaters from the 7-OH unit.
3. Storm water from the central plant area not including the southeast section or northern plant areas.
4. Wastewater from the 7-OH units after its specific treatment.

These streams are collected in manhole 105, neutralized in pH adjustment tank T-2505, equalized in equalization tank T-2501, contacted with acid gases from incinerator B-2201, neutralized again in the pH adjustment basin and then pumped to an underwater discharge point in Curtis Bay from the final surge basin.

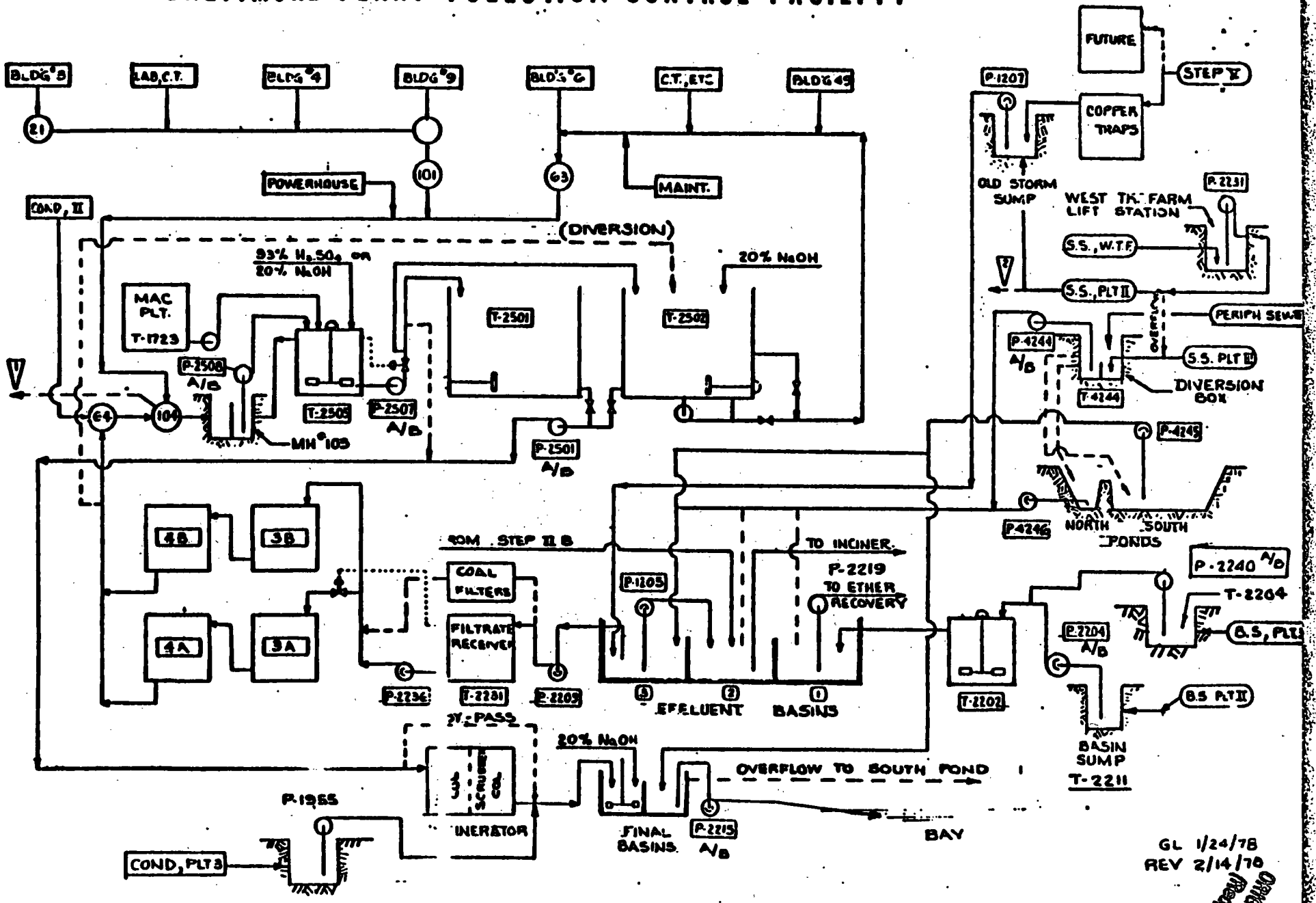
The 7-OH treatment system treats the following streams:

1. Wastewater from the 7-OH unit.
2. Storm water from the 7-OH area.

Storm waters are collected in two retention ponds. Wastewaters are collected in the basin waste lift sumps T-2211 and T-2204. Both streams are then pumped into settling basins for removal of heavy oils, treated for reduction of entrained oils and then discharged to the plant general manhole 105. Heavy oils removed by settling are burned in incinerator B-2201.

Two full time operators are required for these treatment systems. A schemetic of the combined wastewater systems is included in this section.

BALTIMORE PLANT POLLUTION CONTROL FACILITY



GL 1/24/78
REV 2/14/78

ORIGINAL Req

LEGEND

PUMP — MANHOLE — PIPE LINE — EMERGENCY — B.S. BASIN SEWERS

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

ORIGINAL (Red)

FMC

FMC - Baltimore, Maryland

PLANT CLOSURE PLAN

PURPOSE: The following procedure has been prepared to comply with Resource Conservation and Recovery Act (RCRA) regulations listed 5/19/80, to become effective 5/19/81. This plan must be updated annually (and amended as required) according to procedures described in the RCRA Regulations and must be kept at the plant site at all times.

A. Standards

The facility must be closed in a manner that minimizes the need for further maintenance and controls, minimizes or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water, or surface waters or to the atmosphere.

B. Schedule

Upon finalization of the decision to cease operation of the plant as a production or storage facility, the following must be done.

1. Submit this closure plan to the EPA Regional Administrator located at the following address:

   US EPA, Region 3
   Solid Waste Program
   6th & Walnut Streets
   Philadelphia, Pennsylvania 19106
   Phone: 215-597-9814

   This must be done at least 180 days before the expected date at which closure is to begin.

2. The above mentioned Regional Administrator will notify, approve or disapprove this plan within 90 days of receipt, and after providing FMC and the affected public (through a newspaper notice) the opportunity to submit written comments.

3. Within 90 days after receiving the final volume of hazardous waste, FMC must treat all hazardous wastes in storage or in treatment or remove them from the site or dispose of onsite in accordance with the closure plan.

FMC Corporation

Agricultural Chemical Group
1701 East Patapsco Avenue Box 1616
Baltimore Maryland 21203
(301) 355 6400

FMC - Baltimore, Maryland

PLANT CLOSURE PLAN

Upon finalization of the decision to cease operation, the following must be performed:

1. Notify personnel of impending closure date_____.

2. Cancel incoming material orders and shipments.
   Date complete_____.

3. Terminate production
   Schedule completion_____.
   Ethion line date complete_____.
   Schedule completion_____.
   Monomers line date complete_____.
   Schedule completion_____.
   DV Ester line date complete_____.
   Schedule completion_____.
   7-Hydroxy line date complete_____.
   Schedule completion_____.
   Pounce line date complete_____.
   Schedule completion_____.
   Arrivo line date complete_____.
   Schedule completion_____.

4. Ship out products from warehouses.
   Scheduled completion date_____.
   Date completed_____.

5. Ship out, or return excess raw materials, empty containers, pallets, bags, drums, etc.
   Scheduled completion date_____.
   Date completed_____.

C. Procedure

1. Remove all hazardous waste residues from any tanks, discharge control equipment (such as dust collectors), or discharge containment structures. Place in approved containers for treatment or disposal.

2. Testing procedures and results must document the condition of the liquid (wash & waste water) surface impoundment to verify its status.

   (a) If non-hazardous no further action is necessary.

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ORIGINAL (Red)

FMC - Baltimore, Md.

Plant Closure Plan

(b) If test results prove the liquid a hazardous waste, all standing liquid must be pumped up and placed in drums or tank vehicles for treatment or disposal. Also, waste, waste residues, and all underlying or contaminated surrounding soil will be excavated and placed into approved disposal contianers also for treatment or disposal. as dictated by the proper authority.

3. Remove all incinerator residues (including but not limited to ash, scrubber waters and scrubber sludges) from the incinerator. Place in approved containers and test. If test results so indicate, treat the waste so as to render it no longer hazardous, or store until disposed of in an approved manner.

D. Waste Inventory

The maximum inventory of stored waste is anticipated not to exceed 600 drums, (30,000 gal. or comparable volume), placed 4 drums per pallet. The areas used for palletized waste storage may range from approximately 1000 - 5000 sq. ft. of storage area, depending upon stacking height. One storage area is located north of 7-Hydroxy Plant I and another is located east of B-34.

E. Decontamination (Part I)

1. The estimated volumes of hazardous wastes that would have to be disposed of, their disposal costs, primary and alternate disposal sites are given below.

CAS 1/28/86

Waste Description	Estimated on hand inventory	Unit Cost C ($)	Total Disposal Cost (K $)	Disposal Site
T-2501/2502/4301 Solid Residue	1,000,000 P	0.10	100	C.W.M. - N.Y.
Lab Glassware	10 D	650.00	6.5	Rollins - N. J.
DVE Brine	20,000 G	0.16	3.2	Chem-Clear, MD
DVE Step I/II/III Residues	10,000 P	0.33	3.3	Rollins - N. J.
DVE Carbon Tet	15,000 P	0.14	2.1	Rollins - N. J.
DVE/Cyp./Calgon Carbon	10 D	650.00	6.5	Rollins - N. J.
DVE Misc. Solid	10 D	88.00	.880	C.W.M. - ALA
Cyp. Wate (Aq.)	40,000 P	0.04	1.6	DuPont - N. J.
Cyp. Filter Cake	10 D	88.00	.88	C.W.M. - ALA
Cyp. - Misc. (solid)	10 D	88.00	.88	C.W.M. - ALA
Empty Cyanide Drums	100 D	48.00	4.8	C.W.M. - ALA
Sodium Cyanide Waste (Aq.)	500 G	3.00	1.5	C.W.M. - ALA
Empty Drums (Misc.)	300 D	48.00	14.4	C.W.M. - ALA
Pounce Waste (Solid)	10 D	650.00	6.5	Rollins - N.J.
DV Acid Chloride	4000 G	.19	.760	DuPont - N. J.

4a.

CAS 2/28/86

Waste Description	Estimated on hand inventory	Unit Cost C ($)	Total Disposal Cost (K $)	Disposal Site
Ammonium Chloride Filter Cake	80 D	77.00	6.2	GSX - S.C.
TMOA Organic Waste	20,000 P	.16	3.2	Rollins - N.J.
Copper Sludge	100,000 G	1.00	100 K	SCA - N.J.
7-Hydroxy Tar/Misc.	50 D	77.00	3.9 K	GSX - S.C.
ONP Spillage	2 D	77.00	.16 K	GSX - S.C.
7-Nitro Bottoms	50 D	77.00	3.9 K	GSX - S.C.
MAC Column Packing	80,000 P	.10	8.0 K	GSX - S.C.
Basin Sludge	200 D	230.00	46 K	C.W.M. - ALA
Sodium Bromide Waste (Aq.)	15,000 G	.55	8.3 K	SCA - N. J.
Sulfide Tank Washings	2,000 G	3.00	6.0 K	SCA - N. J.
Oil "B"	50,000 P	.19	9.5 K	Rollins - N. J.
P_2S_5 Sweepings	12 D	NO OUTLET AT THIS TIME		
Sodium Sulfide/Bromide Sludge	200 D	230.00	46 K	C.W.M. - ALA
Ethion Filter Cake	30 D	650.00	2.3	GSX - S. C.
Phthalic Anhydride Spillage	10 D	650.00	6.5	Rollins - N.J.
Cooling Tower Sludge	5 D	650.00	3.3	Rollins - N.J.
Diallyl Phthalate Waste	5 D	650.00	3.3	Rollins - N. J.
Pounce Resin	5 D	650.00	3.3	Rollins - N. J.
	GRAND TOTAL		$413,660	

D = Drums
P = Pounds

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FMC - Baltimore, Maryland

PLANT CLOSURE PLAN

2. Prior to cleanup and subsequent decontamination all known wastes and areas suspect of contamination will be tested to determine toxicity. Areas and wastes requiring further attention will be treated in the following manner.

a. Waste Materials

Waste materials will be subject to treatment so as to render them no longer considered as hazardous wastes or so as to render them suitable for placement in an approved dump location.

b. Process Equipment, Incinerator, Emission Control Equipment

Process equipment will be decontaminated in the following manner:

1. All equipment will be drained or emptied of all process residue. Such materials will be handled in an appropriate manner and placed in suitable containers.

2. All equipment will be vacuumed or washed or appropriately disposed of. The wash solution will be a caustic solution or another suitable decontamination solution.

c. Buildings

All buildings which have been used for chemical storage or production will be checked for contamination. Those found to be contaminated will be decontaminated using current appropriate methods or razed and suitably disposed of.

NOTE: All areas subject to decontamination activities will be subject to laboratory testing to assure that decontamination activities have been successful.
Decontamination procedures will be repeated as required until acceptable results have been obtained.

d. Miscellaneous Containers

Dispose of combustible containers (usually bags) suspected to be contaminated by incineration.

Cans or drums, suspected of contamination should be triple-rinsed using solvent (usually water) used in making up the tank mix. This operation should be performed if possible during phase-out of the production process prior to shutdown. Triple rinsing must consist of rinsing the container three times with enough solvent to equal 10 percent of the volume of the container. The container should be disposed of in a proper manner as dictated

by the proper authorities.

It is further suggested that small cans or jugs (plastic or steel) be crushed or shredded if possible so as to minimize the bulk volume at the disposal site.

e. Cost Estimate for Facility Closure

Cost estimates have been provided by the following companies who may be used to annually update these costs.

Disposal Site Costs	Abbreviation
1. E. I. DuPont de Nemours, Inc. Chambers Works Deepwater, New Jersey 08023 Phone (609) 299-5000	DuPont, N. J.
2. Chem-Clear 1910 Russell Street Baltimore, Maryland 21230 Phone (301) 685-3910	CC
3. Chemical Waste Management, Inc. P. O. Box 55 Emelle, Alabama 35459 Phone (205) 652-9531	CWM
4. GSX Services Route #1, Box 255 Pinewood, SC 29125 Phone (803) 452-5003	GSX
5. Rollins Environmental Services, Inc. P. O. Box 221 Bridgeport, New Jersey 08014 Phone (609) 467-3100	CWM
6. SCA Chemical Service Co. Earthline Division 100 Lister Avenue Newark, New Jersey 07105 Phone (201) 465-9100	SCA

PLANT CLOSURE PLAN

E. Decontamination (Part II)

Total Closure Cost $787,360

Note:

A. If test borings and/or water monitoring indicate other areas of contamination, cost of removal, disposal, shipping, etc. must be added to costs supplied above.

B. The Baltimore, Maryland plant site is operated under the effluent guidelines of the plants' NPDES permit. The plant would continue to abide by the NPDES permit requirements and effluent limitations during the entire post closure operation.

CERTIFICATE OF CLOSURE

When closure is completed, FMC must submit to the Regional Administrator (see address, page 1) certification both by the owner (FMC) and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

ORIGINAL
(Red)

PLATE 1

BALTIMORE WEST

BALTIMORE EAST

ORIGINAL (Red)

Coastal areas subject to tidal flooding have not been delineated

SITE LOCATION

.50

1.0

3.0

4.0

RELAY

CURTIS BAY

ORIGINAL (Red)

PUBLIC WATER DISTRIBUTION

THE BALTIMORE MUNICIPAL WATER AUTHORITY UTILIZES 10 SURFACE WATER INTAKES LOCATED OUTSIDE THE STUDY AREA. THEY SERVE APPROXIMATELY 1,100,000 PEOPLE.

THE ANNE ARUNDEL COUNTY WATER AUTHORITY UTILIZES GROUNDWATER WELLS LOCATED OUTSIDE THE STUDY AREA. THEY SERVE APPROXIMATELY 120,830 PEOPLE.

THERE ARE NO KNOWN PRIVATE HOME WELLS IN THE STUDY AREA.

SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 1.1 FEET

MARYLAND

QUADRANGLE LOCATION

FOUR MILE RADIUS MAP

FMC CORPORATION, CURTIS BAY, MD